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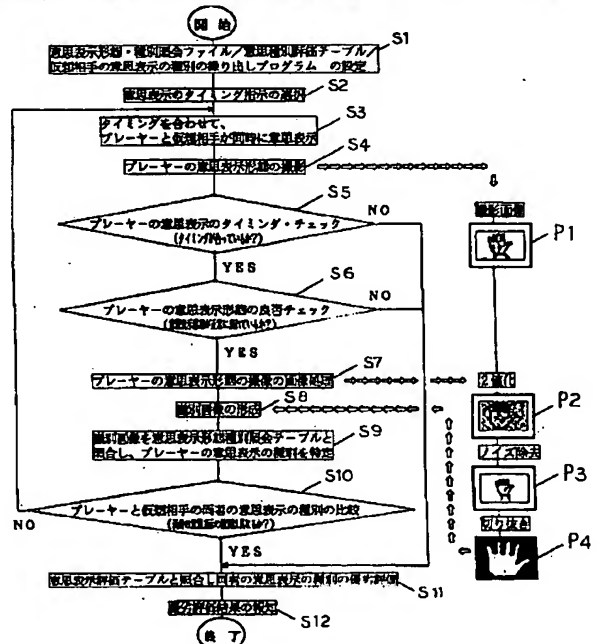
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(54) 【発明の名称】 身体部分の意思表示形態の識別方法および身体部分の意思表示形態の識別装置ならびにその識別方法を用いたコンピュータ・ゲームの対戦評価方法およびその識別装置を備えたコンピュータ・

(57) 【要約】

【課題】 コンピュータ・ゲーム機において、押しボタンやジョイスティックなどの機械的入力手段でプレイヤーの意思をコンピュータに入力することに代え、プレイヤーの身体部分の意思表示形態からプレイヤーの意思を正しく解釈・識別してコンピュータに入力する。これにより、ゲーム機の入力操作を容易・迅速化し、コンピュータ・ゲームのスピード感、迫力、臨場感を高める。

【解決手段】 プレーヤーの身体部分によって各種の意思を表示した意思表示形態を撮影し、その撮像データをコンピュータに入力し、その撮像画像を画像処理して意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータ演算して識別画像の特徴量を算出し、この特徴量に基づきプレイヤーの意思の種別を特定しゲームを進行させる。



【特許請求の範囲】

【請求項 1】 所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、この特徴量に基づき、前記プレーヤーの意思表示形態に化体された意思の種別を特定することを特徴とする身体部分の意思表示形態の識別方法。

【請求項 2】 所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、この特徴量に基づき、前記プレーヤーの意思表示形態に化体された意思の種別を、所定の複数の意思種別の中から選定し特定することを特徴とする身体部分の意思表示形態の識別方法。

【請求項 3】 所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、この特徴量を、コンピュータの演算手段で、複数の意思種別をそれぞれ表わす意思種別データと照合して、前記プレーヤーの意思表示形態に化体された意思の種別を特定することを特徴とする身体部分の意思表示形態の識別方法。

【請求項 4】 身体部分によって表出する各種の意思表示形態とその各意思表示形態に対応する意思種別を関係づけてデータ化した意思表示形態・種別照会ファイルをコンピュータの記憶装置に記憶させ、所定のプレー空間内でプレーヤーがその身体部分によって表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、コンピュータの演算手段で、前記識別画像の特徴を表わす画像データを前記意思表示形態・種別照会ファイルのデータと照合して前記プレーヤーの意思表示形態に化体された意思の種別を特定することを特徴とする身体部分の意思表示形態の識別方法。

【請求項 5】 所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、コンピュータの演算手段で、この特徴量を、コンピュータによって繰り出される仮想相手の意思の種別を表わすデータと比較して前記プレーヤーの意思表示形態に化体された意思の種別と前

記仮想相手の意思の種別の優劣を評価することを特徴とするコンピュータ・ゲームの対戦評価方法。

【請求項 6】 所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、コンピュータの演算手段で、この特徴量を、コンピュータによって繰り出される仮想相手の意思表示形態に対応した意思の種別を表わすデータと比較して、前記プレーヤーの意思表示形態に化体された意思の種別と前記仮想相手の意思の種別の優劣を評価することを特徴とするコンピュータ・ゲームの対戦評価方法。

【請求項 7】 身体部分によって表出する各種の意思表示形態にそれぞれ化体される各意思種別間の優劣関係を特定しデータ化した意思種別評価ファイルをコンピュータの記憶装置に記憶させ、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、この特定量に基づき、前記プレーヤーの意思表示形態に化体された意思の種別を特定し、コンピュータによって繰り出される仮想相手の意思の種別と前記プレーヤーの意思の種別を、前記意思種別評価ファイルと照合して、前記仮想相手の意思種別と前記プレーヤーの意思種別の優劣を評価することを特徴とするコンピュータ・ゲームの対戦評価方法。

【請求項 8】 身体部分によって表出する各種の意思表示形態とその各意思表示形態に対応する意思の種別を関係づけてデータ化した意思表示形態・種別照会ファイルと、前記各意思種別間の優劣関係を特定しデータ化した意思種別評価ファイルをコンピュータの記憶装置に記憶させ、所定のプレー空間内でプレーヤーがその身体部分によって表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、コンピュータの演算手段で、前記識別画像の特徴を表わす画像データを前記意思表示形態・種別照会ファイルのデータと照合して前記プレーヤーの意思表示形態に化体された意思の種別を特定し、コンピュータによって繰り出される仮想相手の意思の種別と前記プレーヤーの意思の種別を、コンピュータの演算手段によって前記意思種別評価ファイルのデータと照合して、前記仮想相手の意思種別と前記プレーヤーの意思種別の優劣を評価することを特徴とするコンピュータ・ゲームの対戦評価方法。

【請求項 9】 プレーヤーが、所定のプレー空間内で所定のタイミングに合わせて、プレーヤーの身体部分に

よって各種の意思を表出した意思表示形態を形成し、この意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成することを特徴とする請求項5ないし請求項8のいずれか1項に記載のコンピュータ・ゲームの対戦評価方法。

【請求項10】 プレーヤーの意思表示形態を形成する所定のタイミングを、プレーヤー側で設定することを特徴とする請求項9に記載のコンピュータ・ゲームの対戦評価方法。

【請求項11】 プレーヤーの意思表示形態の形成タイミングが所定のタイミングから外れた場合、前記プレーヤーに対しゲームの進行に関して不利な評価を与えることを特徴とする請求項9または請求項10に記載のコンピュータ・ゲームの対戦評価方法。

【請求項12】 プレーヤーの意思表示形態の形成が不正常的場合、前記プレーヤーに対しゲームの進行に関して不利な評価を与えることを特徴とする請求項5ないし請求項11のいずれか1項に記載のコンピュータ・ゲームの対戦評価方法。

【請求項13】 意思表示形態はじゃんけん・ゲームにおける手指の形態または両足先の配置形態であり、これに対応する意思の種別はそれぞれ勝負に勝つ意思であるところの「グー」「チョキ」「パー」であり、意思種別評価ファイルは前記「グー」「チョキ」「パー」の相互間の強弱関係の約定であることを特徴とする請求項5ないし請求項12のいずれか1項に記載のコンピュータ・ゲームの対戦評価方法。

【請求項14】 プレーヤーの身体部分によって表出される意思表示形態は身振りにおける身体要部の静的または動的形態であり、仮想相手の意思種別はプレーヤーが倣おうとする意思表示形態であり、プレーヤーの意思の種別は仮想相手の身体要部の形態を倣う身体要部の形態であり、仮想相手の意思種別に対するプレーヤーの意思種別の評価は、仮想相手の意思種別に対するプレーヤーの意思の種別の乖離度に基づくことを特徴とする請求項5または請求項6に記載のコンピュータ・ゲームの対戦評価方法。

【請求項15】 プレーヤーの身体部分によって表出される意思表示形態は身振りにおける身体要部の静的または動的形態であり、仮想相手の意思種別はプレーヤーが倣おうとする意思表示形態への指示画像または音声であり、プレーヤーの意思の種別は仮想相手の前記指示画像または音声に従う身体要部の形態であり、仮想相手の意思種別に対するプレーヤーの意思種別の評価は、仮想相手の意思種別に対するプレーヤーの意思の種別の乖離度に基づくことを特徴とする請求項5または請求項6に記載のコンピュータ・ゲームの対戦評価方法。

【請求項16】 所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態

を撮影する撮影手段と、その意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データから特徴量を算出する演算手段と、この特定量に基づき前記プレーヤーの意思表示形態に化体された意思の種別を特定する意思種別特定手段を備えたことを特徴とする身体部分の意思表示形態の識別装置。

【請求項17】 所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段と、その意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データから特徴量を算出する演算手段と、この特定量に基づき前記プレーヤーの意思表示形態に化体された意思の種別を所定の複数の意思種別の中から選定し特定する意思種別特定手段を備えたことを特徴とする身体部分の意思表示形態の識別装置。

【請求項18】 所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段と、その意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データから特徴量を算出する演算手段と、この特徴量を複数の意思種別をそれぞれ表わす意思種別データと照合して前記プレーヤーの意思表示形態に化体された意思の種別を特定する意思種別特定手段を備えたことを特徴とする身体部分の意思表示形態の識別装置。

【請求項19】 身体部分によって表出する各種の意思表示形態とこの各意思表示形態に対応する意思種別を関係づけてデータ化しコンピュータの記憶装置に記憶される意思表示形態・種別照会ファイルと、所定のプレー空間内でプレーヤーの身体部分によって表出した意思表示形態を撮影する撮影手段と、その意思表示形態を照らす照明装置と、前記撮影手段で撮影した前記意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、前記識別画像の特徴を表わす画像データを前記意思表示形態・種別照会ファイルのデータと照合して前記プレーヤーの意思表示形態に化体された意思の種別を特定する意思種別特定手段を備えたことを特徴とする身体部分の意思表示形態の識別装置。

【請求項20】 所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段と、この意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わ

す画像データから特徴量を算出する演算手段と、この特徴量をコンピュータから繰り出される仮想相手の意思の種別を表わすデータと比較してプレーヤーの意思表示形態に化体された意思の種別と前記仮想相手の意思の種別の優劣を評価する評価手段を備えたことを特徴とするコンピュータ・ゲーム装置。

【請求項21】 所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段と、この意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データから特徴量を算出する演算手段と、この特徴量をコンピュータによって繰り出される仮想相手の意思表示形態に対応した意思の種別を表わすデータと比較して前記プレーヤーの意思表示形態に化体された意思の種別と前記仮想相手の意思の種別の優劣を評価する評価手段を備えたことを特徴とするコンピュータ・ゲーム装置。

【請求項22】 身体部分によって表出する各種の意思表示形態にそれぞれ化体される各意思種別間の優劣関係を特定しデータ化した意思種別評価ファイルを記憶するコンピュータの記憶装置と、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段と、この意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データを演算して特徴量を算出する演算手段と、この特定量に基づき前記プレーヤーの意思表示形態に化体された意思の種別を特定しコンピュータによって繰り出される仮想相手の意思の種別と前記プレーヤーの意思の種別を前記意思種別評価ファイルと照合して前記仮想相手の意思種別と前記プレーヤーの意思種別の優劣を評価する評価手段を備えたことを特徴とするコンピュータ・ゲーム装置。

【請求項23】 身体部分によって表出する各種の意思表示形態とその各意思表示形態に対応する意思の種別を関係づけてデータ化した意思表示形態・種別照会ファイルならびに前記各意思種別間の優劣関係を特定しデータ化した意思種別評価ファイルを記憶するコンピュータの記憶装置と、所定のプレー空間内でプレーヤーがその身体部分によって表出した意思表示形態を撮影する撮影手段と、この意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データを前記意思表示形態・種別照会ファイルのデータと照合して前記プレーヤーの意思表示形態に化体された意思の種別を特定しコンピュータによって繰り出される仮想相手の意

思の種別と前記プレーヤーの意思の種別を前記意思種別評価ファイルのデータと照合して前記仮想相手の意思種別と前記プレーヤーの意思種別の優劣を評価する評価手段を備えたことを特徴とするコンピュータ・ゲーム装置。

【請求項24】 プレーヤーが、所定のプレー空間内で所定のタイミングに合わせて、プレーヤーの身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段を備えたことを特徴とする請求項20ないし請求項23のいずれか1項に記載のコンピュータ・ゲーム装置。

【請求項25】 プレーヤーの意思表示形態を形成する所定のタイミングをプレーヤーが設定するタイミング設定手段を備えたことを特徴とする請求項20ないし請求項24のいずれか1項に記載のコンピュータ・ゲーム装置。

【請求項26】 プレーヤーの意思表示形態の形成タイミングが所定のタイミングから外れたことを検知し前記プレーヤーに対しゲームの進行に関して不利な評価を報知する評価手段を備えたことを特徴とする請求項20ないし請求項25のいずれか1項に記載のコンピュータ・ゲーム装置。

【請求項27】 プレーヤーの意思表示形態の形成が不正常であることを検知し前記プレーヤーに対しゲームの進行に関して不利な評価を報知する評価手段を備えたことを特徴とする請求項20ないし請求項25のいずれか1項に記載のコンピュータ・ゲーム装置。

【請求項28】 プレーヤーの身体部分によって各種の意思を表出した意思表示形態を異なる方向から撮影する複数のカメラ装置を備え、各カメラ装置の周辺に前記意思表示形態上に生ずる陰影を打ち消すための複数の照明装置を配設したことを特徴とする請求項20ないし請求項27のいずれか1項に記載のコンピュータ・ゲーム装置。

【請求項29】 意思表示形態はじゃんけん・ゲームにおける手指の形態または両足先の配置形態であり、これに対応する意思の種別はそれぞれ勝負に勝つ意思であるところの「グー」「チョキ」「パー」であることを特徴とする請求項20ないし請求項28のいずれか1項に記載のコンピュータ・ゲーム装置。

【請求項30】 プレーヤーの身体部分によって表出される意思表示形態は身振りにおける身体要部の静的または動的形態であり、仮想相手の意思種別はプレーヤーが倣おうとする意思表示形態であり、プレーヤーの意思の種別は仮想相手の身体要部の形態を倣う身体要部の形態であり、仮想相手の意思種別に対するプレーヤーの意思種別の評価は、仮想相手の意思種別に対するプレーヤーの意思の種別の乖離度に基づくことを特徴とする請求項20または請求項21に記載のコンピュータ・ゲーム装置。

【請求項31】 プレーヤーの身体部分によって表出される意思表示形態は身振りにおける身体要部の静的または動的形態であり、仮想相手の意思種別はプレーヤーが従おうとする意思表示形態への指示画像または音声であり、プレーヤーの意思の種別は仮想相手の前記指示画像または音声に従う身体要部の形態であり、仮想相手の意思種別に対するプレーヤーの意思種別の評価は、仮想相手の意思種別に対するプレーヤーの意思の種別の乖離度に基づくことを特徴とする請求項20または請求項6に記載のコンピュータ・ゲーム装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、ある意思を表わした身体部分の形態（身体部分の意思表示形態）をコンピュータで解読してその意思表示の種別を識別する技術、さらにその識別した意思表示の種別をコンピュータで他の意思表示の種別と対比して、両意思表示の種別間の優劣を評価・判定する技術に関するものである。

【0002】即ちこの発明は、ある意思を表わした身体部分の形態（身体部分の意思表示形態）を撮影し、その撮像を画像処理して得た識別画像に基づいて、その意思表示形態に化体された意思表示の種別を特定する、コンピュータを用いた身体部分の意思表示形態の識別方法と、その識別方法を実施するための意思表示形態の識別装置、ならびに同識別方法を主要部として採り入れた各種のコンピュータ・ゲームの対戦評価方法（例えば、勝敗判定や点数評価の方法など）、および上記の意思表示形態の識別装置を備えた各種のコンピュータ・ゲーム装置（例えば、じゃんけん・ゲーム装置や身振り遊技装置など）に関するものである。

【0003】

【従来の技術】身体部分の形態を変化させて所望の意思を表現し伝達することは日常良く見られることである。手話はその典型であるが、首を縦に振れば肯定を意味し横にふれば否定を意味することは周知である。また「じゃんけん」では、手指の形態の違いあるいは両足先の配置の違いによって、石（グー）、鋏（チョキ）、紙（パー）の選択意思を表わし、ベース・ボールやバレー・ボールなどのスポーツでも、身体部分の形態を変えて各種の意思を伝えるサインとしている。また指先の方向形態（指の差す方向）で先方の物の選択の意思表示としたり、握り拳の親指を立てる形態によって満足（良くできた）の意思を表すことなども周知である。更に手話の手振りや、踊りの振り付けあるいはステップも、身体部分の意思表示形態による意思の表現である。

【0004】一方コンピュータが形成する仮想相手と対戦するゲーム（コンピュータ対戦ゲーム）は各種あるが、従来はコンピュータで形成される仮想相手に対してプレーヤーの意思を伝える手法（コンピュータにプレーヤーの各種の意思表示を入力する手法）は、機械的入力

装置を介してプレーヤーの意思表示を入力する手法であり、身体部分の意思表示形態によって簡単に伝えられる意思表示であっても、各種の意思表示に対応させて、コンピュータ・ゲーム装置に設けられた多数の押しボタンやフット・スイッチあるいはジョイスティックなどの機械的入力装置プレーヤーが操作しなければならなかった。このためゲーム自体は極めて簡単な例えば「じゃんけん・ゲーム」であっても、幼児のプレーヤーにとっては、「グー」「チョキ」「パー」に対応する選択入力操作を的確迅速に実行することは極めて難しい。また年長のプレーヤーであっても、意思表示の入力操作が煩わしいことからゲームの流れが阻害され、ゲームのスピード感、迫力、臨場感が著しく損なわれることになる。

【0005】

【発明が解決しようとする課題】この発明は、上記のような従来のコンピュータ・ゲーム装置に見られる意思表示の入力手法の煩雑さ、困難さを大幅に軽減し、コンピュータ・ゲームのスピード感、迫力、臨場感を大幅に高めることを目的とし、プレーヤーの意思をコンピュータに伝えるために介在した機械的入力手段を排し、プレーヤーの意思が化体された身体部分の意思表示形態をそのままコンピュータへの入力情報源としてゲームを進行させようとするものである。そのためには、コンピュータの入力情報源となる身体部分の意思表示形態を正しく解読し意思表示形態の特徴を識別して、その意思表示形態に化体された意思の種別を特定することが課題となる。またこの発明は、コンピュータ・ゲームにおいてプレーヤーの意思表示形態が所定のルールに沿って正常に表現されない場合に、プレーヤーに負担を与えることにより公正で魅力あるゲームの進行を維持することをも目的とする。

【0006】またこの発明は、身体部分の意思表示形態をコンピュータへ意思を伝えるための直接入力情報源としてその意思表示形態を正しく認識する技術と、その技術を基に、二つの意思表示形態を比較評価する技術を、例えば踊りの振り付けやリズムの演習あるいは手話技術の演習などの身振り表現の分野に応用することにより、コンピュータ・ゲームの感覚でそれらの身振りや動きの妙を楽しみ、あるいは身振り表現技術の向上にも繋げようとするものである。

【0007】

【課題を解決するための手段】上記の課題・目的を達するための手段として、この発明は、所定のプレー空間でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、この特徴量に基づき、プレーヤーの意思表示形態に化体された意思の種別を特定することにより、身体部分の意思表示形態

をコンピュータ・ゲーム機の入力源として用いるものである。さらにこの発明では、身体部分によって表出された各種の意思表示形態とこれに化体された意思の種別を関係づけて設定した意思表示形態・種別照会ファイルと、その各意思種別間の優劣関係を定めた意思種別評価ファイルを、予めコンピュータの記憶装置に記憶させ、所定のプレー空間内で所定のタイミングに合わせて、プレーヤーがその身体部分によって表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理してその意思表示形態の特徴を捕えた識別画像を形成し、コンピュータの演算手段によってこの識別画像を意思表示形態・種別照会ファイルと照合することによりプレーヤーの意思の種別を特定し、また上記タイミングに合わせてコンピュータによって繰り出される仮想相手の意思の種別とプレーヤーの意思の種別を演算手段によって意思種別評価ファイルと照合することにより仮想相手の意思の種別に対するプレーヤーの意思の種別の優劣を評価・判定する。

【0008】またこの発明では、プレーヤーの意思表示形態を表すタイミングが所定のタイミングから外れた場合、あるいはプレーヤーの意思表示形態が所定のプレー空間から外れて形成されたり、その意思表示形態が何を意味するのか不明確な形態である場合、その意思表示形態の撮像の画像処理を完遂することなく、プレーヤーの意思表示に対し不利な評価を行えるようにもする。

【0009】またこの発明では、コンピュータにプレーヤーの意思表示形態を正しく解読させるために、プレーヤーの意思表示形態を異なる角度から撮影するカメラ装置を少なくとも2基設置し、各カメラ装置の周辺に少なくとも2基の照明装置を配置して、プレーヤーの意思表示形態に陰影が現れるのを防ぎ、意思表示形態の上の陰影によって意思表示形態の撮像を正しく迅速に画像処理できるようにする。

【0010】

【発明の実施の形態】この発明の基本的な一つの実施の形態は、所定のプレー空間でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、この特徴量に基づき、前記プレーヤーの意思表示形態に化体された意思の種別を特定する身体部分の意思表示形態の識別方法である。

【0011】この発明の基本的な他の実施の形態は、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、この特徴量に基づき、前記プレーヤーの意

思表示形態に化体された意思の種別を、所定の複数の意思種別の中から選定し特定する身体部分の意思表示形態の識別方法である。

【0012】この発明の基本的な他の実施の形態は、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、この特徴量を、コンピュータの演算手段で、複数の意思種別をそれぞれ表わす意思種別データと照合して、前記プレーヤーの意思表示形態に化体された意思の種別を特定する身体部分の意思表示形態の識別方法である。

【0013】この発明の基本的な他の実施の形態は、身体部分によって表出する各種の意思表示形態とその各意思表示形態に対応する意思種別を関係づけてデータ化した意思表示形態・種別照会ファイルをコンピュータの記憶装置に記憶させ、所定のプレー空間内でプレーヤーがその身体部分によって表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、コンピュータの演算手段で、前記識別画像の特徴を表わす画像データを前記意思表示形態・種別照会ファイルのデータと照合して前記プレーヤーの意思表示形態に化体された意思の種別を特定する身体部分の意思表示形態の識別方法である。

【0014】この発明の基本的な他の実施の形態は、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、コンピュータの演算手段で、この特徴量を、コンピュータによって繰り出される仮想相手の意思の種別を表わすデータと比較して前記プレーヤーの意思表示形態に化体された意思の種別と前記仮想相手の意思の種別の優劣を評価するコンピュータ・ゲームの対戦評価方法である。

【0015】この発明の基本的な他の実施の形態は、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、コンピュータの演算手段で、この特徴量を、コンピュータによって繰り出される仮想相手の意思表示形態に対応した意思の種別を表わすデータと比較して、前記プレーヤーの意思表示形態に化体された意思の種別と前記仮想相手の意思の種別の優劣を評価するコンピュータ・ゲームの対戦評価方法である。

【0016】この発明の基本的な他の実施の形態は、身体部分によって表出する各種の意思表示形態にそれぞれ化体される各意思種別間の優劣関係を特定しデータ化した意思種別評価ファイルをコンピュータの記憶装置に記憶させ、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、この識別画像の特徴を表わす画像データをコンピュータの演算手段で演算して特徴量を算出し、この特定量に基づき、前記プレーヤーの意思表示形態に化体された意思の種別を特定し、コンピュータによって繰り出される仮想相手の意思の種別と前記プレーヤーの意思の種別を、前記意思種別評価ファイルと照合して、想相手の意思種別と前記プレーヤーの意思種別の優劣を評価するコンピュータ・ゲームの対戦評価方法。

【0017】この発明の基本的な他の実施の形態は、身体部分によって表出する各種の意思表示形態とその各意思表示形態に対応する意思の種別を関係づけてデータ化した意思表示形態・種別照会ファイルと、前記各意思種別間の優劣関係を特定しデータ化した意思種別評価ファイルをコンピュータの記憶装置に記憶させ、所定のプレー空間内でプレーヤーがその身体部分によって表出した意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成し、コンピュータの演算手段で、前記識別画像の特徴を表わす画像データを前記意思表示形態・種別照会ファイルのデータと照合して前記プレーヤーの意思表示形態に化体された意思の種別を特定し、コンピュータによって繰り出される仮想相手の意思の種別と前記プレーヤーの意思の種別を、コンピュータの演算手段によって前記意思種別評価ファイルのデータと照合して、前記仮想相手の意思種別と前記プレーヤーの意思種別の優劣を評価するコンピュータ・ゲームの対戦評価方法。

【0018】この発明の他の実施の形態は、プレーヤーが、所定のプレー空間内で所定のタイミングに合わせて、プレーヤーの身体部分によって各種の意思を表出した意思表示形態を形成し、この意思表示形態を撮影し、この意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成するものである。

【0019】この発明の他の実施の形態は、プレーヤーの意思表示形態を形成する所定のタイミングを、プレーヤー側で設定するものである。

【0020】この発明の他の実施の形態は、プレーヤーの意思表示形態の形成タイミングが所定のタイミングから外れた場合、前記プレーヤーに対しゲームの進行に関して不利な評価を与えるものである。

【0021】この発明の他の実施の形態は、プレーヤーの意思表示形態の形成が不正常的場合、前記プレーヤーに対しゲームの進行に関して不利な評価を与えるもので

ある。

【0022】この発明の他の実施の形態は、じゃんけん・ゲームへの応用であって、意思表示形態はじゃんけん・ゲームにおける手指の形態または両足先の配置形態であり、これに対応する意思の種別はそれぞれ勝負に勝つ意思であるところの「グー」「チョキ」「パー」であり、意思種別評価ファイルは前記「グー」「チョキ」「パー」の相互間の強弱関係の約定である。

【0023】この発明の他の実施の形態は、身振りゲームへの応用であって、プレーヤーの身体部分によって表出される意思表示形態は、身振りにおける身体要部の静的または動的形態であり、仮想相手の意思種別はプレーヤーが倣おうとする意思表示形態であり、プレーヤーの意思の種別は仮想相手の身体要部の形態を倣う身体要部の形態であり、仮想相手の意思種別に対するプレーヤーの意思種別の評価は、仮想相手の意思種別に対するプレーヤーの意思の種別の乖離度に基づくものである。

【0024】この発明の他の実施の形態は、また身振りゲームへの応用であって、プレーヤーの身体部分によって表出される意思表示形態は身振りにおける身体要部の静的または動的形態であり、仮想相手の意思種別はプレーヤーが倣おうとする意思表示形態への指示画像または音声であり、プレーヤーの意思の種別は仮想相手の前記指示画像または音声に従う身体要部の形態であり、仮想相手の意思種別に対するプレーヤーの意思種別の評価は、仮想相手の意思種別に対するプレーヤーの意思の種別の乖離度に基づくものである。

【0025】この発明の基本的な他の実施の形態は、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段と、その意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データから特徴量を算出する演算手段と、この特定量に基づき前記プレーヤーの意思表示形態に化体された意思の種別を特定する意思種別特定手段を備えた身体部分の意思表示形態の識別装置である。

【0026】この発明の基本的な他の実施の形態は、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段と、その意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データから特徴量を算出する演算手段と、この特定量に基づき前記プレーヤーの意思表示形態に化体された意思の種別を所定の複数の意思種別の中から選定し特定する意思種別特定手段を備えた身体部分の意思表示形態の識別装置である。

【0027】この発明の基本的な他の実施の形態は、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段と、その意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データから特徴量を算出する演算手段と、この特徴量を複数の意思種別をそれぞれ表わす意思種別データと照合して前記プレーヤーの意思表示形態に化体された意思の種別を特定する意思種別特定手段を備えた身体部分の意思表示形態の識別装置である。

【0028】この発明の基本的な他の実施の形態は、身体部分によって表出する各種の意思表示形態とこの各意思表示形態に対応する意思種別を関係づけてデータ化しコンピュータの記憶装置に記憶される意思表示形態・種別照会ファイルと、所定のプレー空間内でプレーヤーの身体部分によって表出した意思表示形態を撮影する撮影手段と、その意思表示形態を照らす照明装置と、前記撮影手段で撮影した前記意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、前記識別画像の特徴を表わす画像データを前記意思表示形態・種別照会ファイルのデータと照合して前記プレーヤーの意思表示形態に化体された意思の種別を特定する意思種別特定手段を備えた身体部分の意思表示形態の識別装置である。

【0029】この発明の基本的な他の実施の形態は、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段と、この意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データから特徴量を算出する演算手段と、この特徴量をコンピュータによって繰り出される仮想相手の意思の種別を表わすデータと比較して前記プレーヤーの意思表示形態に化体された意思の種別と前記仮想相手の意思の種別の優劣を評価する評価手段を備えたコンピュータ・ゲーム装置である。

【0030】この発明の基本的な他の実施の形態は、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段と、この意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データから特徴量を算出する演算手段と、この特徴量をコンピュータによって繰り出される仮想相手の意思表示形態に対応した意思の種別を表わすデータと比較して前記プレーヤーの意思表示形態に化体された意思の種別と前記仮想相手の意思の種別の優劣を評価する評価手段を備えたコン

ピュータ・ゲーム装置である。

【0031】この発明の基本的な他の実施の形態は、身体部分によって表出する各種の意思表示形態にそれぞれ化体される各意思種別間の優劣関係を特定しデータ化した意思種別評価ファイルを記憶するコンピュータの記憶装置と、所定のプレー空間内でプレーヤーがその身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段と、この意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データを演算して特徴量を算出する演算手段と、この特定量に基づき前記プレーヤーの意思表示形態に化体された意思の種別を特定しコンピュータによって繰り出される仮想相手の意思の種別と前記プレーヤーの意思の種別を前記意思種別評価ファイルと照合して仮想相手の意思種別と前記プレーヤーの意思種別の優劣を評価する評価手段を備えたコンピュータ・ゲーム装置である。

【0032】この発明の基本的な他の実施の形態は、身体部分によって表出する各種の意思表示形態とその各意思表示形態に対応する意思の種別を関係づけてデータ化した意思表示形態・種別照会ファイルならびに前記各意思種別間の優劣関係を特定しデータ化した意思種別評価ファイルを記憶するコンピュータの記憶装置と、所定のプレー空間内でプレーヤーがその身体部分によって表出した意思表示形態を撮影する撮影手段と、この意思表示形態を照らす照明装置と、前記撮影手段で撮影した意思表示形態の撮像を画像処理して前記意思表示形態の特徴を捕えた識別画像を形成する画像処理手段と、この識別画像の特徴を表わす画像データを前記意思表示形態・種別照会ファイルのデータと照合して前記プレーヤーの意思表示形態に化体された意思の種別を特定しコンピュータによって繰り出される仮想相手の意思の種別と前記プレーヤーの意思の種別を前記意思種別評価ファイルのデータと照合して前記仮想相手の意思種別と前記プレーヤーの意思種別の優劣を評価する評価手段を備えたコンピュータ・ゲーム装置である。

【0033】この発明の他の実施の形態は、プレーヤーが、所定のプレー空間内で所定のタイミングに合わせて、プレーヤーの身体部分によって各種の意思を表出した意思表示形態を撮影する撮影手段を備えたコンピュータ・ゲーム装置である。

【0034】この発明の他の実施の形態は、プレーヤーの意思表示形態を形成する所定のタイミングをプレーヤーが設定するタイミング設定手段を備えたコンピュータ・ゲーム装置である。

【0035】この発明の他の実施の形態は、プレーヤーの意思表示形態の形成タイミングが所定のタイミングから外れたことを検知し前記プレーヤーに対しゲームの進行に関して不利な評価を報知する評価手段を備えたコン

ピュータ・ゲーム装置である。

【0036】この発明の他の実施の形態は、プレーヤーの意思表示形態の形成が不正常であることを検知し前記プレーヤーに対しゲームの進行に関して不利な評価を報知する評価手段を備えたコンピュータ・ゲーム装置である。

【0037】この発明の他の実施の形態は、プレーヤーの身体部分によって各種の意思を表出した意思表示形態を異なる方向から撮影する複数のカメラ装置を備え、各カメラ装置の周辺に前記意思表示形態上に生ずる陰影を打ち消すための複数の照明装置を配設したコンピュータ・ゲーム装置である。

【0038】この発明の他の実施の形態は、じゃんけん・ゲーム機への応用であって、意思表示形態はじゃんけん・ゲームにおける手指の形態または両足先の配置形態であり、これに対応する意思の種別はそれぞれ勝負に勝つ意思であるところの「グー」「チョキ」「パー」である。

【0039】この発明の他の実施の形態は、身振り・ゲーム機への応用であって、プレーヤーの身体部分によって表出される意思表示形態は、身振りにおける身体要部の静的または動的形態であり、仮想相手の意思種別はプレーヤーが倣おうとする意思表示形態であり、プレーヤーの意思の種別は仮想相手の身体要部の形態を倣う身体要部の形態であり、仮想相手の意思種別に対するプレーヤーの意思種別の評価は、仮想相手の意思種別に対するプレーヤーの意思の種別の乖離度に基づくものである。

【0040】この発明の他の実施の形態は、これも身振り・ゲーム機への応用であって、プレーヤーの身体部分によって表出される意思表示形態は、身振りにおける身体要部の静的または動的形態であり、仮想相手の意思種別はプレーヤーが倣おうとする意思表示形態への指示画像または音声であり、プレーヤーの意思の種別は仮想相手の前記指示画像または音声に従う身体要部の形態であり、仮想相手の意思種別に対するプレーヤーの意思種別の評価は、仮想相手の意思種別に対するプレーヤーの意思の種別の隔たり度合いに基づくものである。

【0041】

【実施例】以下を図面を参考にして、この発明の実施例を説明する。図1ないし図5は、コンピュータと「じゃんけん」を競うコンピュータ・ゲームの過程、ならびに、じゃんけん・ゲーム用コンピュータ・ゲーム装置（コンピュータが作り出す仮想相手とじゃんけん遊びをするゲーム機）にこの発明を適用した例を示し、図1は、じゃんけんで表出する身体部分（手指）の形態（意思表示形態）に化体された意思の種別（意思種別）の識別・特定方法ならびにじゃんけんを競うコンピュータ・ゲームにおける対戦評価方法の一例を示すフローチャート、図5は、この発明に係るじゃんけん・ゲーム用コンピュータ・ゲーム装置の一例の外観斜視図、図4は同コ

ンピュータ・ゲーム装置のブロック構成図、図2は、上記の意思の種別を識別・特定するひとつの手法を説明するための意思表示形態・種別対照図、図3は、上記の意思の種別ゲーム上の優劣を評価する一つの手法を説明するための意思種別評価対照図である。

【0042】じゃんけん・ゲーム用コンピュータ・ゲーム装置は、図5に示すように、筐体51の前面にディスプレイ52が設けられ、筐体51の前面上部には複数基のカメラ装置（撮影手段）53a、53bが取り付けられており、各々のカメラ装置53a、53bに対しそれぞれ2基の照明装置54ap、54aq、と、照明装置54bp、54bqが配設されている。筐体51の内部にはコンピュータが収められ、筐体51の前面にはスピーカ58や、じゃんけんにおける手指の形態（意思表示形態）の検知タイミングを選定するタイミング設定手段59が覗いている。タイミング設定手段59の構成はハードウェア装置に限らず、ソフトウェアのみで構成することも可能である。そして筐体51の前方に位置する限られた空間（カメラ装置53a、53bが被写体を十分的確に撮影できる範囲の空間）が所定のプレー空間55となり、プレーヤーはこの所定のプレー空間55内で、舞台51aを背景に、所定の「じゃんけん『ボン』」のタイミングに合わせて、手指を使って、じゃんけんの意思表示形態となる「石（グー）」「鉄（チョキ）」「紙（パー）」の何れかの意思表示形態56を表出する。

【0043】一方、コンピュータによって作り出されたじゃんけん・ゲームの仮想相手（プレーヤーのじゃんけん対戦相手）表出するじゃんけんの意思表示形態（仮想相手の意思表示形態）57がディスプレイ52上に表わされ、プレーヤーはこの仮想相手とじゃんけん・ゲームを競う。言うまでもなく、プレーヤーならびに仮想相手の意思表示形態（「石」「鉄」「紙」）56、57には、じゃんけんのルールに従った各意思表示形態（「石」「鉄」「紙」）間の強弱関係を意識した意思の種別（意思種別を「グー」「チョキ」「パー」で表わす）が化体されている。

【0044】仮想相手の各意思表示形態57は、例えばコンピュータ・プログラムによってランダムに繰り出される。ディスプレイ52上に表わされる仮想相手の意思表示形態57は、必ずしも手指の形態（「石」「鉄」「紙」）でなくても、仮想相手の意思の種別を表示する文字、記号、図形などであっても良く、またプレーヤーと仮想相手のじゃんけん勝負の結果のみを表示することも考えられる。さらにディスプレイ52上には仮想相手の意思表示形態57を表わさず、スピーカ58で音声で表わしたり、別に設けた人形で仮想相手の意思表示形態を表わすことも考えられる。なお、通常じゃんけんの意思表示形態は手指で表現されるが、両足先の配置形態で表現することも可能であり、その場合は所定のプレー空間55内にある舞台51a上で、「グー」「チョキ」

「パー」の意思の種別に対応する両足先の配置形態を表現すれば良い。

【0045】プレーヤーの意思表示形態56は照明装置54a p, 54a q, 54b p, 54b q, で照明されカメラ装置53a, 53bで撮影される。カメラ装置53a, 53bで撮影された意思表示形態56の撮像はコンピュータで画像処理（撮影画像の2値化、画像のノイズ除去、画像の切り抜き、など）がなされて識別画像が形成され、コンピュータによってこの識別画像から、プレーヤーの意思表示形態56に化体されたプレーヤーの意思の種別（「グー」「チョキ」「パー」のいずれかの種別）が特定され、さらにコンピュータによってこのプレーヤーの意思の種別と仮想相手の意思の種別57とを比較して両者の意思の種別の優劣（じゃんけんの結果としてのプレーヤーの勝ち負け）を評価・判定し、その判定結果をディスプレイ52上に表示60で報知し、また表示60と同時に、あるいは表示60に代えてスピーカ58から音声でじゃんけん勝負の結果を報知しても良い。

【0046】何れにしてもこの発明で重要なことは、プレーヤーの意思表示形態56の特徴をカメラ装置53a, 53bで的確に撮影し、且つその撮像を迅速に画像処理して明確な識別画像解析が得られることであり、そのために上記実施例に見るように幾つかの手段が採られている。即ちプレーヤーの意思表示形態56を1基のカメラ装置で1方向のみから撮影する場合には、カメラ装置に対する意思表示形態56の位置や傾き加減によっては、意思表示形態56の特徴を撮影する上での死角が生じ意思表示形態56の特徴を捕らえることができないことがある。このため、この発明では、意思表示形態56を異なる方向から撮影する少なくとも2基のカメラ装置53a, 53bを用いて、意思表示形態56の特徴を的確に撮影する上で、出来る限り死角が生じないようにしている。なお、前記死角を除くために、さらに必要であれば、カメラ装置を3基以上配設して意思表示形態56をさらに多くの適切な方向から撮影できるようにすれば良い。また、照明によって意思表示形態56に陰影が現われると、意思表示形態56の撮影画像に多くの陰影や強い陰影が残り、画像処理の過程で画像を2値化して解析する際、これらの陰影が解析の障害となることが多い上に、画像解析のための演算量を多く要することによって迅速な画像処理が損なわれることから、この発明では、照明装置の光源を多元化してカメラ装置の脇に光学的にバランスをとって配設することにより、各光源からの照明によって意思表示形態56上に生ずる陰影を互いに打ち消して画像解析への障害を除き且つ画像解析のための演算量を大幅に削減するようにしている。そして上記実施例では、各カメラ装置53a, 53bの脇に最少の2基の照明装置54a p, 54a qと照明装置54b p, 54b q, を配設している。もとより理論的には各

カメラ装置53a, 53bの光軸上に照明の光源を配設すれば陰影の問題は生じないが、現実には物理的にその配置が不可能であることから、これに代わる実用的な手段として、照明装置の光源を環状（ドーナツ状）にして、この環状の光源をカメラ装置の光軸と同心的に配設すれば、各カメラ装置に配設する照明装置が1基でも、意思表示形態56上に生ずる陰影を抑えることができる。さらに意思表示形態56の輪郭を鮮明に写し出せるように意思表示形態56の背景となる舞台51aの材質や色彩・色調を吟味している。

【0047】また従来のじゃんけん・ゲーム用コンピュータ・ゲーム装置では、「じゃんけん『ボン』」のタイミング、即ち意思表示形態56の撮影画像を検知（画像認識）するタイミングはコンピュータ側で固定的に設定されている。このためプレーヤーのリズム感の善し悪しによってプレーヤーのじゃんけんのタイミングが上手く合わないことが可なりあり、特に幼児にとってタイミングを合せることに困難を伴う。これに対しこの発明の上記実施例では「じゃんけん『ボン』」のタイミングをプレーヤー側から設定し得るタイミング設定手段59を設けたものである。即ちタイミング設定手段59は、カメラ装置53a, 53bの撮像結果を解析して一定の条件を満たすか否かをチェックする条件チェック手段を有しており、意思表示形態56の撮像結果がある条件を満たした瞬間をトリガとすることで画像識別のタイミングを決定するものである。この結果、タイミングの設定はプレーヤー側で決定されることになり、プレーヤーがタイミングを合わせることの難しさが解消される。なお、タイミング設定手段59はハードウェア装置でなくともソフトウェアのみでも構成し得る。

【0048】次に上記のじゃんけん・ゲーム用コンピュータ・ゲーム装置に用いられている身体部分の意思表示形態の識別方法およびコンピュータ・ゲームの対戦評価方法のプロセスは図1に示す通りである。これら識別方法および対戦評価方法のプロセスを図2、図3、図4を参考に説明する。まずステップS1において、意思表示形態・種別照会ファイルF1と意思種別評価ファイルF2と仮想相手の意思の種別の繰り出しプログラムF3をコンピュータ40の記録装置42に設定し記憶させる。意思表示形態・種別照会ファイルF1は、各種の意思表示形態（各識別画像）と、これに化体された意思の種別の対応関係を示したデータ群であり、この意思表示形態・種別照会ファイルF1の骨子を説明用に図表化したものが図2の意思表示形態・種別対照図である。

【0049】意思種別評価ファイルF2は、プレーヤーの意思の種別（意思種別記号）および仮想相手の意思の種別（意思種別記号）の各種の組み合わせと、周知のじゃんけんルールに従った、それら各組み合わせにおけるプレーヤーの勝敗の関係（即ち各種の意思の種別の間の優劣関係）を定めるデータ群である。この意思種別評価

ファイルF 2の骨子を説明用に図表化したものが図3の意思種別評価対照図である。

【0050】そしてズ3の意思種別評価対照図に示すように、じゃんけんでプレーヤーが表出する意思表示形態(「石」「鉄」「紙」)のタイミングがずれて遅かったり(遅出し)早かったり(早出し)した場合は共にプレーヤーの方を負けとするように約定されている。またプレーヤーが所定のプレー空間55の外で意思表示形態を表わしたり意思表示形態56の表現が不完全で意思表示形態56から明瞭な識別画像が得られない場合も、プレーヤーの方を負けとするように約定されている。このような約定は、プレーヤーが表出する意思表示形態が不完全であったり、じゃんけんのルールに反した場合、ゲームの進行面でプレーヤーが不利になる評価をして、ゲームの緊張感を高め、公正魅力あるゲームの維持を図ろうとするものであるが、ゲームの進行面でプレーヤーが不利になる評価の手段は、上記実施例のように、プレーヤー意思の種別を不利に評価してじゃんけんの勝敗をプレーヤー負けと判定するもののほか、例えばそのゲームを没収することにするなど多様に考えられる。また仮想相手の意思の種別も繰り出しプログラムF 3は、コンピュータによって仮想相手の意思の種別をランダムに繰り出すコンピ

【0051】次にステップS 2において、タイミング設定手段59によって、「じゃんけん『ボン』」のタイミングの設定・指示を従来のようにコンピュータ側に任ずるのかプレーヤーの条件で決めるようにするのかプレーヤーが選択する。これでじゃんけん・ゲームの準備が整ったので、ステップS 3において、プレーヤーと仮想相手がタイミングを合せて、「グー」「チョキ」「パー」の何れかの意思を表わす。そしてステップS 4において、カメラ装置53(53a, 53b)によってプレーヤーの意思表示形態56が撮影され、撮影画像(撮像)P 1が得られる。次いでステップS 5において、先のプレーヤーの意思表示のタイミングが合っていたか否かがチェックされ、そのタイミングが合っていた場合は、ステップS 6において、プレーヤーの意思表示形態(「石」「鉄」「紙」)の表現がプレー空間55の内で正常に表現されたか否か、その良否がチェックされる。その結果が良い場合、ステップS 7において、コンピュータ40の中央処理装置(演算手段)41によってプレーヤーの先の意思表示形態の撮像P 1を画像処理する。画像処理は撮像P 1を2値化処理してノイズを含んだ2値化画像P 2に変え、2値化画像P 2をノイズ除去処理して画像P 3とし、さらに画像P 3を切り抜き処理して、ステップS 8において識別画像P 4を得る。そしてステップS 9において、中央処理装置(演算手段)41によって識別画像P 4特徴を表わす画像データと意思表示形態・種別照会ファイルF 1のデータと照合してプレーヤーの意思の種別を特定し、続いてステップ10においてプレー

ヤーの意思の種別と仮想相手の意思の種別が異なるか否かの比較を行う。その結果、両者の意思の種別が異なっていれば、ステップS 11において中央処理装置41によって、両者の意思の種別の組み合わせを意思種別評価ファイルF 2のデータと照合してプレーヤーの意思の種別の優劣評価(勝ち負け判定)を行い、ステップS 12において、その評価結果を映像出力装置44・ディスプレイ52あるいは音声出力装置45・スピーカ58で報知して1回のじゃんけん勝負が終わる。

【0052】またステップS 10において、プレーヤーの意思の種別と仮想相手の意思の種別が同じであった場合は、ステップ2に返って再度じゃんけんが行われ上記のプロセスが繰り返される。他方、ステップS 5においてプレーヤーの意思表示のタイミングがあっていなかったとされた場合、あるいはステップS 6においてプレーヤーの意思表示形態が正常に表れていなかったとされた場合は、撮像P 1の画像処理を完遂することなくステップS 11に移って意思種別評価ファイルF 2のデータに照らしてプレーヤー負けの評価となって報知される。

【0053】図4は、図5に示したじゃんけん・ゲーム用コンピュータ・ゲーム装置のブロック構成を示すもので、同装置はコンピュータ40とカメラ装置53(53a, 53b)照明装置54(54ap, 54aq, 54bp, 54bq)およびタイミング設定手段59からなり、コンピュータ40は演算装置を含む中央処理装置41、記憶装置42、入出力制御部43、出力装置(映像出力装置)44、出力装置(音声出力装置)45、入力装置46などからなり、記憶装置42には、前述の意思表示形態・種別照会ファイルF 1ならびに意思種別評価ファイルF 2と仮想相手の意思種別の繰り出しプログラムF 3が記憶されている。同装置の機能や各部の働きについては、前述の説明からも明らかであるが、プレーヤーの身体部分で表出した意思表示形態56を照明装置54(54ap, 54aq, 54bp, 54bq)で照らし、カメラ装置53(53a, 53b)で撮影する。そしてタイミング設定手段59からのタイミング信号に基づいて、プレーヤーの意思表示形態56の撮像データが直接コンピュータ40の入力装置から入力され、中央処理装置(演算手段)41により画像処理されて識別画像P 4が形成される。そして中央処理装置41により識別画像P 4の特徴を表わす画像データを意思表示形態・種別照会ファイルF 1のデータと照合してプレーヤーの意思の種別を認識し特定する。次にこの特定されたプレーヤーの意思表示の種別と、仮想相手の意思の種別(仮想相手の意思種別の繰り出しプログラムF 3に基づいてコンピュータ40によって繰り出される仮想相手の意思の種別)とを、中央処理装置(演算手段)41により意思種別評価ファイルF 2のデータと照合して、両者の意思表示の種別の間の優劣関係(両者のじゃんけんの勝ち負け)を判定し、その結果を映像出力装置44あるいは

音声出力装置45でプレーヤーに報知してゲームを楽しむものである。

【0054】図6は、この発明の他の実施例としての身振り演習用コンピュータ・ゲーム装置を示したものである。61は筐体、61aは舞台、62はディスプレイ、63a、63bはカメラ装置、64ap、64aq、64bp、64bqは照明装置、65はプレー空間、66はプレーヤーの意思表示形態（身振り、踊り、など）、67は模範となる仮想相手の意思表示形態、68はスピーカ、70は評点表示で、同コンピュータ・ゲーム装置の構成および同コンピュータ・ゲーム装置に採り入れられている意思表示形態の識別方法は基本的に図5に示したじゃんけん・ゲーム用コンピュータ・ゲーム装置におけるものと同じである。しかしこの身振り演習用コンピュータ・ゲーム装置は、身体部分で表現する意思表示形態が動的な身振り形態を含むものであり、仮想相手の意思表示の種別は模範となる身体要部の意思表示形態で動的な身振り形態を含むものであり、プレーヤーの意思表示の種別は模範となる仮想相手の身振り形態に倣う身振り形態であり、ここで用いる意思種別評価ファイルは、例えば仮想相手の身振り形態に対するプレーヤーの身振り形態の乖離度とそれに対する減点度を表わしたものとすることができる。そこで例えばコンピュータが繰り出す仮想相手の模範の身振り形態67をディスプレイ62上に映し出し、仮想相手の模範の身振り形態67を倣おうとするプレーヤーがディスプレイ62を見ながら舞台61aの上で仮想相手の身振り形態67に合せて身体を動かす。そして幾つかの主要な身振り形態の時点でプレーヤーの身振り形態66をカメラ装置63で撮影し、その撮像を画像処理し、同時点の仮想相手の画像と比較して両者の乖離度を演算し、意思種別評価ファイルと照合してプレーヤーの評価点を決定し、その評点表示70をディスプレイ62上に表わして報知することができる。このような身振り演習用のコンピュータ・ゲーム装置は幅広い層で楽しめる上に、手話や踊りの学習用としても実用的効果が期待できる。

【0055】

【発明の効果】上記の実施例からも明らかなように、この発明に係る身体部分の意思表示形態の識別方法、身体部分の意思表示形態の識別装置、コンピュータ・ゲームの対戦評価方法、コンピュータ・ゲーム装置では、プレーヤーの意思をコンピュータあるいはコンピュータ・ゲーム装置に伝える手段として、他の入力変換手段（機械的選択スイッチ、ジョイティック、など）を介したり他の入力信号に変換したりすることなく、プレーヤーの種々の意思が込められたプレーヤーの身体部分の意思表示形態を撮影し、この意思表示形態の撮影画像の画像データを直接的にコンピュータあるいはコンピュータ・ゲーム装置に入力し、その撮像を画像処理し画像解析してプレーヤーの意思表示を解釈し、以後この意思表示が絡ん

だゲームその他の処理がコンピュータを介して実行されるもので、プレーヤーとコンピュータの間のインターフェースが極めて直接的で自然なものとなり、意思表示の入力が極めて簡単、迅速、且つ自然に行えるようになる。この結果、コンピュータ・ゲームの分野では、ゲームの流れが円滑になり、スピード感、迫力、臨場感を著しく高めることができるようになり、また入力操作に困難を伴っていた幼児や高齢者もこの種のゲームに参加しやすくなる。また身体部分の意思表示形態の入力を連続的に円滑に行うことができるので、身体の連続的な動きをも対象とするコンピュータ・ゲーム装置（例えば身振り演習装置など）の用途開発に役立つものである。

【0056】意思表示形態の撮影に当たっては、意思表示形態を複数の撮影手段で角度を変えて撮影するので、死角に陥ることなく、意思表示形態の特徴を的確に捕らえることができる上に、意思表示形態に陰影ができないよう、各撮影手段の脇に少なくとも2基に照明装置を配設し、あるいは環状の光源を各撮影手段の光軸と同心的に配設するので、意思表示形態の撮像の画像処理に当たり画像解析に要する演算量を大幅に削減できる上に正確な画像処理と解析を行うことができる。

【0057】またじゃんけん・ゲーム用コンピュータ・ゲーム装置のように、タイミングを合せてプレーすることが必要なコンピュータ・ゲーム装置においては、プレーヤー側の条件でタイミングを設定できるようにもするので、リズム感に問題がある幼児でも、タイミング合わせの緊張感やプレッシャーを伴うことなくゲームに参加することができるようになる。またタイミング合せが必須である、じゃんけん・ゲーム用コンピュータ・ゲーム装置では、プレーヤーの意思表示形態（「石」「鉄」「紙」）を示すタイミングがずれたり、意思表示形態の表現が適正でなかった場合、これらを検知してプレーヤーに対し、プレーの進行上不利な評価・判定を出すようにしているので、ゲームの緊張感と公正なゲーム運びを維持できる。

【図面の簡単な説明】

【図1】この発明による意思表示形態の識別方法の過程を示すフローチャート。

【図2】同意意思表示形態の識別方法を説明するための意思表示形態・種別対照図。

【図3】この発明によるコンピュータ・ゲームの対戦評価方法を説明するための意思種別評価対照図。

【図4】この発明の実施例を示すじゃんけん・ゲーム用コンピュータ・ゲーム装置のブロック構成図。

【図5】同コンピュータ・ゲーム装置の外観斜視図。

【図6】この発明の他の実施例を示す身振り演習用コンピュータ・ゲーム装置の外観斜視図。

【符号の説明】

S1～S12 : ステップ

P1 : 撮像

P2 : 2値化画像
 P3 : ノイズ除去処理画像
 P4 : 識別画像
 F1 : 意思表示形態・種別照会ファイル
 F2 : 意思種別評価ファイル
 F3 : 仮想相手の意思種別の繰り出しプログラム
 40 : コンピュータ
 41 : 中央処理装置(演算装置)(画像処理手段)
 (意思種別特定手段)(評価手段)
 42 : 記憶装置
 43 : 入出力制御部
 44 : 出力装置(映像出力装置)
 45 : 出力装置(音声出力装置)
 46 : 入力装置
 51, 61 : 筐体

51a, 61a : 舞台
 52, 62 : ディスプレー
 53 : カメラ装置(撮影手段)
 53a, 53b : カメラ装置(撮影手段)
 63a, 63b : カメラ装置(撮影手段)
 54 : 照明装置
 54a, 54aq, 54bp, 54bq : 照明装置
 64a, 64aq, 64bp, 64bq : 照明装置
 55, 65 : プレー空間
 56, 66 : プレーヤーの意思表示形態
 57, 67 : 仮想相手の意思表示形態
 58, 68 : スピーカ
 59 : タイミング設定手段
 60, 70 : 表示

【図 2】

【図 3】

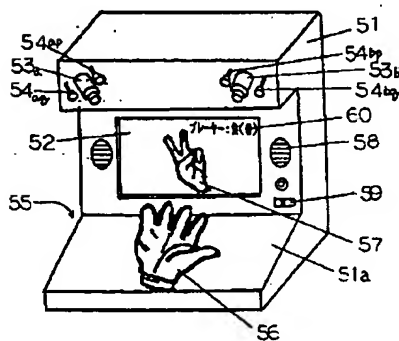
【じゃんけん・ゲームにおける意思表示形態・種別対照図】

顔 別 図 像	顔別記号	意思表示形態	意思の種別	意思種別記号
	11	石	「グー」	Q
	12	紙	「チョキ」	Y
	13	紙	「パー」	P

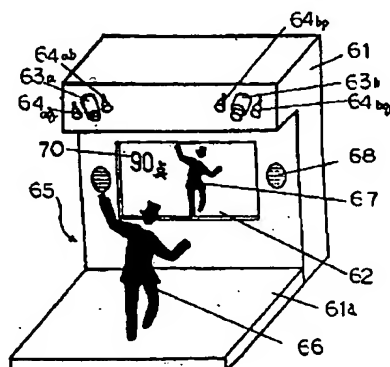
【じゃんけん・ゲームにおける意思種別評価対照図】

プレイヤーの意思種別	vs	仮想相手の意思種別	プレイヤーの勝敗	勝敗記号
Q	vs	P	負け	0
Q	vs	Y	勝ち	1
Y	vs	Q	負け	0
Y	vs	P	勝ち	1
P	vs	Y	負け	0
P	vs	Q	勝ち	1
プレイヤーの意思表示のタイミング			負け	0
プレイヤーの意思表示の遅延			負け	0

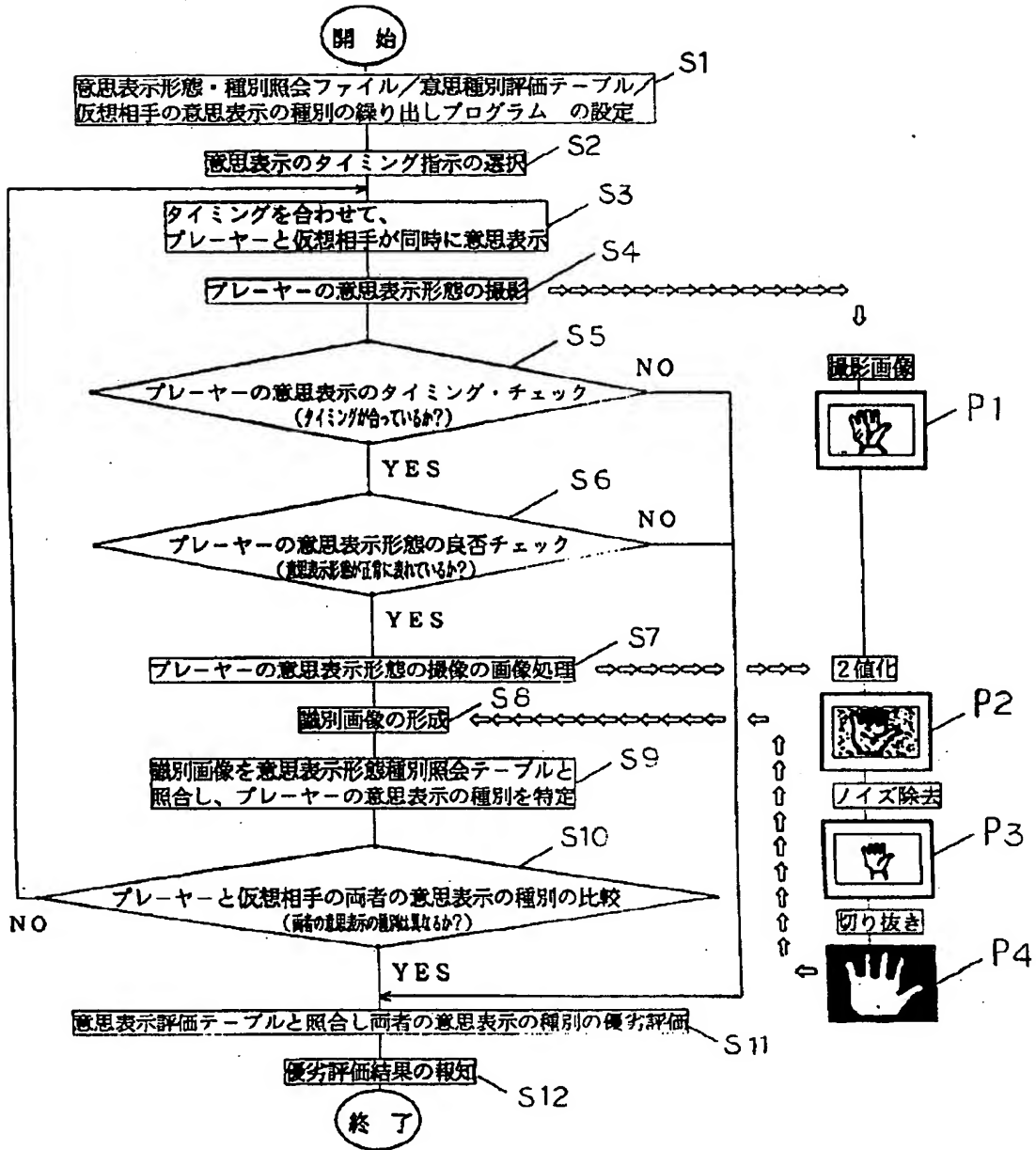
【図 5】



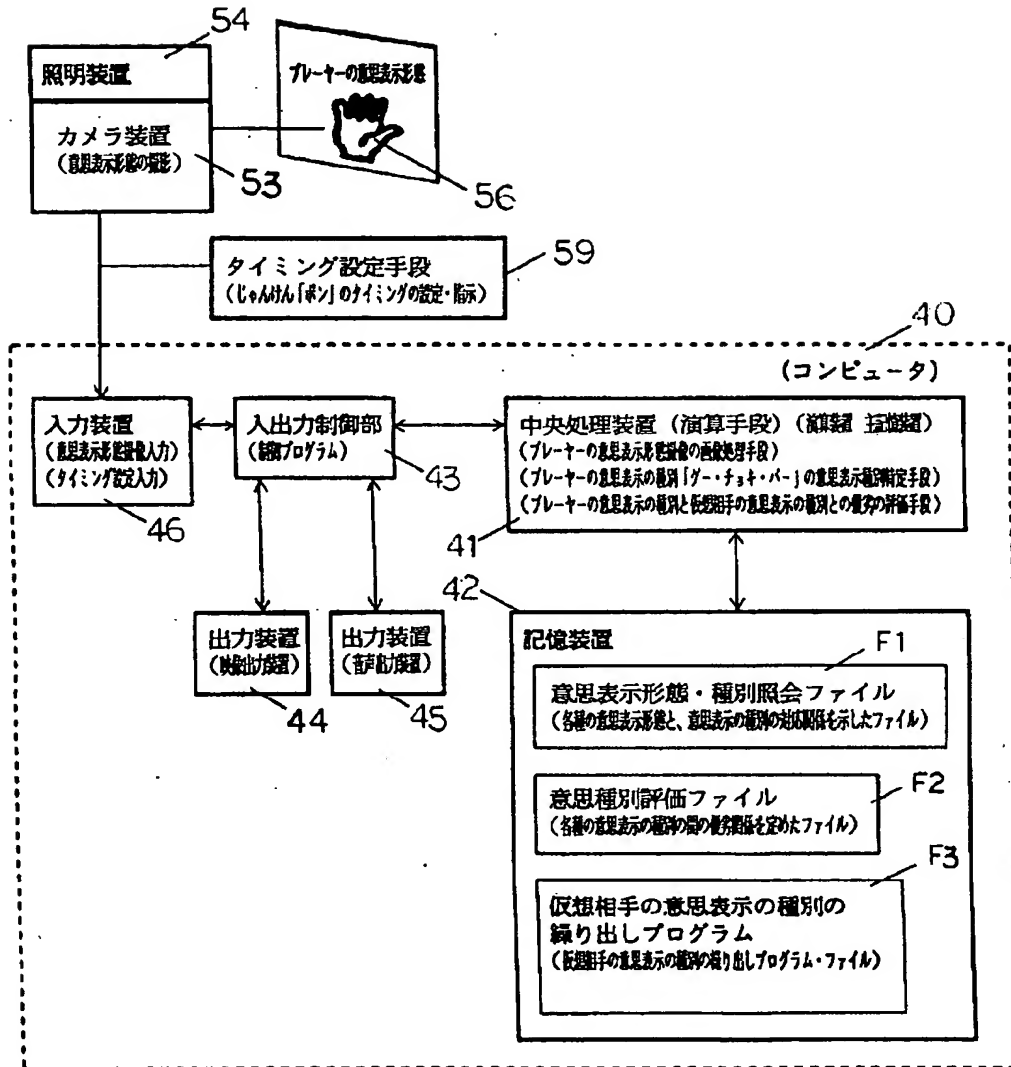
【図 6】



【図 1】



【図 4】



フロントページの続き

Fターム(参考) 2C001 BA06 BB00 BB02 BB05 BC00
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FF03 HH20 JJ01 JJ76 KK31
KK45

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ゲーム装置

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Bibliography.

- (19) [Country of Issue] Japan Patent Office (JP)
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(54) [Title of the Invention] Computer-game equipment equipped with the waging-war evaluation method of the computer game which used the discernment method for the identification unit row of the discernment method of the declaration-of-intention gestalt of a body portion, and the declaration-of-intention gestalt of a body portion, and its identification unit.
(51) [The 7th edition of International Patent Classification]
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G06T 1/00
H04N 7/18
[FI]
A63F 9/22 C
H
9/00 502 A
H04N 7/18 P
G06F 15/62 380
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[Patent Attorney]

[Name] Smallness Kaji Ming.

[Theme code (reference)]

2C001.

Five B057.

5C054.

Nine A001.

[F term (reference)]

2C001 bus-available06 BB00 BB02 BB05 BC00 BC05 CA00 CA08 CA09.

5B057 DA11 DB02 DC09.

5C054 AA01 EJ05 FC05 FC12 HA15.

9A001 BB03 BB04 DD13 EE02 EE05 FF03 HH20 JJ01 JJ76 KK31 KK45.

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Summary.

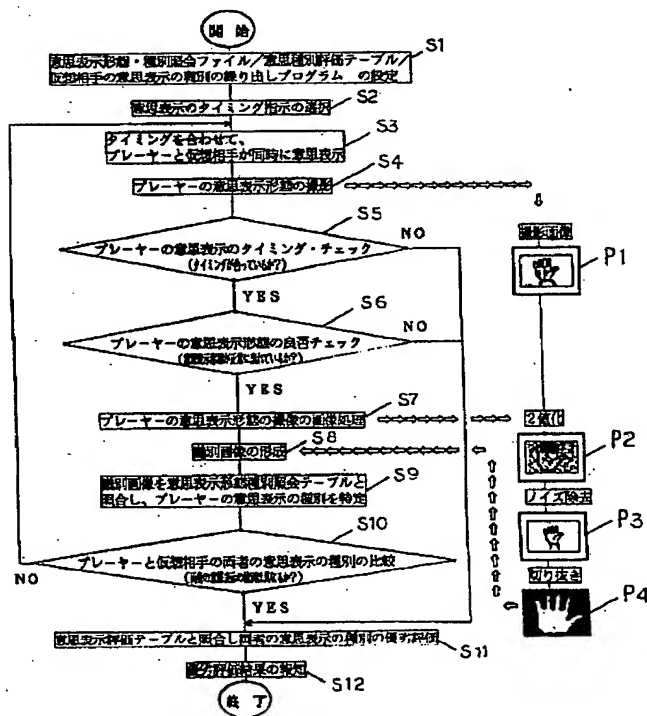
(57) [Abstract]

[Technical problem] In a computer-game machine, it replaces with inputting the intention of a player into a computer with mechanical input meanses, such as a push

button and a joy stick, the intention of a player is correctly decoded and discriminated from the declaration-of-intention gestalt of the body portion of a player, and it inputs into a computer. Thereby, easy and speeding up of the alter operation of a game machine are done, and the speediness of a computer game, force, and presence are raised.

[Means for Solution] The discernment picture which photoed the declaration-of-intention gestalt which displayed various kinds of intentions, inputted the image pck-up data into the computer, carried out the image processing of the image pck-up, and caught the feature of a declaration-of-intention gestalt by the body portion of a player is formed, the characteristic quantity of a discernment picture is computed by carrying out the computer operation of the image data showing the feature of this discernment picture, the classification of the intention of a player is specified based on this characteristic quantity, and a game is advanced.

[Translation done.]



[Translation done.]

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CLAIMS

[Claim(s)]

[Claim 1] A player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space. The discernment picture which carried out the image processing of the image pick-up of this declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt is formed. The discernment method of the declaration-of-intention gestalt of the body portion characterized by specifying the classification of the intention which computed characteristic quantity by having calculated the image data showing the feature of this discernment picture with the operation means of a computer, and was ****(ed) by the declaration-of-intention gestalt of the aforementioned player based on this characteristic quantity.

[Claim 2] A player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space. The discernment picture which carried out the image processing of the image pick-up of this declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt is formed. Characteristic quantity is computed by calculating the image data showing the feature of this discernment picture with the operation means of a computer. The discernment method of the declaration-of-intention gestalt of the body portion characterized by selecting the classification of the intention ****(ed) by the declaration-of-intention gestalt of the aforementioned player from two or more predetermined intention classification, and specifying it based on this characteristic quantity.

[Claim 3] A player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space. The discernment picture which carried out the image processing of the image pick-up of this declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt is formed. Characteristic quantity is computed by calculating the image data showing the feature of this discernment picture with the operation means of a computer. this characteristic quantity with the operation means of a computer The discernment method of the declaration-of-intention gestalt of the body portion characterized by collating with the intention classification data which express two or more intention classification, respectively, and specifying

the classification of the intention ****(ed) by the declaration-of-intention gestalt of the aforementioned player.

[Claim 4] The declaration-of-intention gestalt and classification reference file which connected and data-ized intention classification corresponding to various kinds of declaration-of-intention gestalten expressed by the body portion and each declaration-of-intention gestalt of those are stored in storage equipment. The declaration-of-intention gestalt which the player expressed by the body portion is photoed in predetermined play space, and the discernment picture which carried out the image processing of the image pck-up of this declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt is formed. with the operation means of a computer The discernment method of the declaration-of-intention gestalt of the body portion characterized by specifying the classification of the intention which collated the image data showing the feature of the aforementioned discernment picture with the data of aforementioned declaration-of-intention gestalt and classification reference file, and was ****(ed) by the declaration-of-intention gestalt of the aforementioned player.

[Claim 5] A player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space. The discernment picture which carried out the image processing of the image pck-up of this declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt is formed, and characteristic quantity is computed by calculating the image data showing the feature of this discernment picture with the operation means of a computer. with the operation means of a computer The waging-war evaluation method of the computer game characterized by evaluating the superiority or inferiority of the classification of an intention, and the classification the aforementioned virtual partner's intention ****(ed) by the declaration-of-intention gestalt of the aforementioned player as compared with the data showing the classification of the intention of the virtual partner who lets out this characteristic quantity by computer.

[Claim 6] A player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space. The discernment picture which carried out the image processing of the image pck-up of this declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt is formed, and characteristic quantity is computed by calculating the image data showing the feature of this discernment picture with the operation means of a computer. with the operation means of a computer It compares with the data showing the classification of the intention corresponding to the declaration-of-intention gestalt of the virtual partner who lets out this characteristic quantity by computer. The waging-war evaluation method of the computer game characterized by evaluating the superiority or inferiority of the classification of an intention, and the classification the aforementioned virtual partner's intention ****(ed) by the declaration-of-intention gestalt of the

aforementioned player.

[Claim 7] The intention classification evaluation file which specified and data-ized the of-dominance relation during each intention classification by which a-izing object is each carried out to various kinds of declaration-of-intention gestalten expressed by the body portion is stored in storage equipment. A player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space. The discernment picture which carried out the image processing of the image pck-up of this declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt is formed. Characteristic quantity is computed by calculating the image data showing the feature of this discernment picture with the operation means of a computer. Based on this amount of specification, specify the classification of the intention ****(ed) by the declaration-of-intention gestalt of the aforementioned player, and the classification of a virtual partner's intention and the classification of the intention of the aforementioned player which it lets out by computer are collated with the aforementioned intention classification evaluation file. The waging-war evaluation method of the computer game characterized by evaluating the superiority or inferiority of the aforementioned virtual partner's intention classification, and the intention classification of the aforementioned player.

[Claim 8] The declaration-of-intention gestalt and classification reference file which connected and data-ized classification of the intention corresponding to various kinds of declaration-of-intention gestalten expressed by the body portion, and each declaration-of-intention gestalt of those, The intention classification evaluation file which specified and data-ized the of-dominance relation during each aforementioned intention classification is stored in storage equipment. The declaration-of-intention gestalt which the player expressed by the body portion is photoed in predetermined play space, and the discernment picture which carried out the image processing of the image pck-up of this declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt is formed. with the operation means of a computer The classification of the intention which collated the image data showing the feature of the aforementioned discernment picture with the data of aforementioned declaration-of-intention gestalt and classification reference file, and was ****(ed) by the declaration-of-intention gestalt of the aforementioned player is specified. The classification of a virtual partner's intention and the classification of the intention of the aforementioned player which it lets out by computer are collated with the data of the aforementioned intention classification evaluation file by the operation means of a computer. The waging-war evaluation method of the computer game characterized by evaluating the superiority or inferiority of the aforementioned virtual partner's intention classification, and the intention classification of the aforementioned player.

[Claim 9] The waging-war evaluation method of a computer game given in any 1 term of the claim 5 characterized by for a player forming the declaration-of-

intention gestalt which expressed various kinds of intentions by the body portion of a player according to predetermined timing in predetermined play space, and forming the discernment picture which photoed this declaration-of-intention gestalt, carried out the image processing of the image pick-up of this declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt, or a claim 8.

[Claim 10] The waging-war evaluation method of the computer game according to claim 9 characterized by setting up the predetermined timing which forms the declaration-of-intention gestalt of a player by the player side.

[Claim 11] The waging-war evaluation method of the computer game according to claim 9 or 10 characterized by giving disadvantageous evaluation about advance of a game to the aforementioned player when the formation timing of the declaration-of-intention gestalt of a player separates from predetermined timing.

[Claim 12] The waging-war evaluation method of a computer game given in any 1 term of the claim 5 characterized by giving disadvantageous evaluation about advance of a game to the aforementioned player when formation of the declaration-of-intention gestalt of a player is an inaccurate usual state, or a claim 11.

[Claim 13] the gestalt of a finger — or — both — the waging-war evaluation method of a computer game given in any 1 term of the claim 5 characterized by to be the arrangement gestalt of a tip of a foot, to be that the classification of the intention corresponding to this "is good" respectively, "CHOKI", and a "par", and for an intention classification evaluation file to be the agreement of the mutual strength relation between the above "good", "CHOKI", and a "par", or a claim

[Claim 14] The declaration-of-intention gestalt expressed by the body portion of a player is a static or dynamic gestalt of a body important section in a gesture. A virtual partner's intention classification is the declaration-of-intention gestalt which a player tends to imitate. The classification of the intention of a player is the gestalt of the body important section imitated in the gestalt of a virtual partner's body important section, and evaluation of the intention classification of a player to a virtual partner's intention classification The waging-war evaluation method of the computer game according to claim 5 or 6 characterized by being based on the degree of deviation of the classification of the intention of a player to a virtual partner's intention classification.

[Claim 15] The declaration-of-intention gestalt expressed by the body portion of a player is a static or dynamic gestalt of a body important section in a gesture. A virtual partner's intention classification is the directions picture or voice to the declaration-of-intention gestalt which a player tends to follow. The classification of the intention of a player is the gestalt of the body important section according to a virtual partner's aforementioned directions picture or voice, and evaluation of the intention classification of a player to a virtual partner's intention classification The waging-war evaluation method of the computer game according to claim 5 or 6 characterized by being based on the degree of deviation of the classification of the

intention of a player to a virtual partner's intention classification.

[Claim 16] The identification unit of the declaration-of-intention gestalt of the body portion characterized by providing the following. A photography means by which a player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space. The lighting system which illuminates the declaration-of-intention gestalt. An image-processing means to form the discernment picture which carried out the image processing of the image pick-up of the declaration-of-intention gestalt photoed with the aforementioned photography means, and caught the feature of the aforementioned declaration-of-intention gestalt. An operation means to compute characteristic quantity from the image data showing the feature of this discernment picture, and an intention classification specification means to specify the classification of the intention ****(ed) by the declaration-of-intention gestalt of the aforementioned player based on this amount of specification.

[Claim 17] The identification unit of the declaration-of-intention gestalt of the body portion characterized by providing the following. A photography means by which a player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space. The lighting system which illuminates the declaration-of-intention gestalt. An image-processing means to form the discernment picture which carried out the image processing of the image pick-up of the declaration-of-intention gestalt photoed with the aforementioned photography means, and caught the feature of the aforementioned declaration-of-intention gestalt. An operation means to compute characteristic quantity from the image data showing the feature of this discernment picture, and an intention classification specification means to select and specify the classification of the intention ****(ed) by the declaration-of-intention gestalt of the aforementioned player based on this amount of specification out of two or more predetermined intention classification.

[Claim 18] The identification unit of the declaration-of-intention gestalt of the body portion characterized by providing the following. A photography means by which a player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space. The lighting system which illuminates the declaration-of-intention gestalt. An image-processing means to form the discernment picture which carried out the image processing of the image pick-up of the declaration-of-intention gestalt photoed with the aforementioned photography means, and caught the feature of the aforementioned declaration-of-intention gestalt. An intention classification specification means to specify the classification of an operation means to compute characteristic quantity from the image data showing the feature of this discernment picture, and the intention which collated this characteristic quantity with the intention classification data which express two or more intention classification, respectively, and was ****(ed) by the declaration-of-intention gestalt of the aforementioned player.

[Claim 19] The identification unit of the declaration-of-intention gestalt of the body portion characterized by providing the following. The declaration-of-intention gestalt and classification reference file which connects and data-izes intention classification corresponding to various kinds of declaration-of-intention gestalten expressed by the body portion, and each of this declaration-of-intention gestalt, and is memorized by storage equipment. A photography means to photo the declaration-of-intention gestalt expressed by the body portion of a player in predetermined play space. The lighting system which illuminates the declaration-of-intention gestalt. An intention classification specification means specify the classification of an image-processing means form the discernment picture which carried out the image processing of the image pck-up of the aforementioned declaration-of-intention gestalt photoed with the aforementioned photography means, and caught the feature of the aforementioned declaration-of-intention gestalt, and the intention which collated the image data express the feature of the aforementioned discernment picture with the data of an aforementioned declaration-of-intention gestalt and classification reference file, and were ****(ed) by the declaration-of-intention gestalt of the aforementioned player.

[Claim 20] Computer-game equipment characterized by providing the following. A photography means by which a player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space. The lighting system which illuminates this declaration-of-intention gestalt. An image-processing means to form the discernment picture which carried out the image processing of the image pck-up of the declaration-of-intention gestalt photoed with the aforementioned photography means, and caught the feature of the aforementioned declaration-of-intention gestalt. An evaluation means to evaluate the superiority or inferiority of the classification of an intention, and the classification the aforementioned virtual partner's intention ****(ed) by the declaration-of-intention gestalt of a player from the image data showing the feature of this discernment picture as compared with an operation means to compute characteristic quantity, and the data showing the classification of the intention of the virtual partner who lets out this characteristic quantity from a computer.

[Claim 21] Computer-game equipment characterized by providing the following. A photography means by which a player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space. The lighting system which illuminates this declaration-of-intention gestalt. An image-processing means to form the discernment picture which carried out the image processing of the image pck-up of the declaration-of-intention gestalt photoed with the aforementioned photography means, and caught the feature of the aforementioned declaration-of-intention gestalt. An evaluation means to evaluate the superiority or inferiority of the classification of an intention, and the classification the aforementioned virtual partner's intention ****(ed) by the declaration-of-intention gestalt of the aforementioned player from the image data

showing the feature of this discernment picture as compared with an operation means to compute characteristic quantity, and the data showing the classification of the intention corresponding to the declaration-of-intention gestalt of the virtual partner who lets out this characteristic quantity by the KOYUN pewter.

[Claim 22] The storage equipment which memorizes the intention classification evaluation file which specified and data-ized the of-dominance relation during each intention classification by which a-izing object is each carried out to various kinds of declaration-of-intention forms expressed by the body portion, A photography means by which a player photos the declaration-of-intention form which expressed various kinds of intentions by the body portion in predetermined play space, An image-processing means to form the discernment picture which carried out the image processing of the image pck-up of the declaration-of-intention form photoed with the aforementioned photography means to the lighting system which illuminates this declaration-of-intention form, and caught the feature of the aforementioned declaration-of-intention form, An operation means to compute characteristic quantity by calculating the image data showing the feature of this discernment picture, The classification of the intention ****(ed) by the declaration-of-intention form of the aforementioned player based on this amount of specification is specified. by computer Computer-game equipment characterized by having an evaluation means to collate with the aforementioned intention classification evaluation file the classification of a virtual partner's intention and the classification of the intention of the aforementioned player which it lets out, and to evaluate the superiority or inferiority of the aforementioned virtual partner's intention classification, and the intention classification of the aforementioned player.

[Claim 23] By the body portion The storage equipment which memorizes the intention classification evaluation file which specified and data-ized the of-dominance relation during each aforementioned intention classification in the declaration-of-intention form and the classification reference file row which connected and data-ized classification of the intention corresponding to various kinds of declaration-of-intention forms to express and each declaration-of-intention form of those, A photography means by which a player photos the declaration-of-intention form expressed by the body portion in predetermined play space, An image-processing means to form the discernment picture which carried out the image processing of the image pck-up of the declaration-of-intention form photoed with the aforementioned photography means to the lighting system which illuminates this declaration-of-intention form, and caught the feature of the aforementioned declaration-of-intention form, The classification of the intention which collated the image data showing the feature of this discernment picture with the data of aforementioned declaration-of-intention form and classification reference file, and was ****(ed) by the declaration-of-intention form of the aforementioned player is specified. by computer Computer-game equipment characterized by having an evaluation means to collate with the data of the aforementioned intention

classification evaluation file the classification of a virtual partner's intention and the classification of the intention of the aforementioned player which it lets out, and to evaluate the superiority or inferiority of the aforementioned virtual partner's intention classification, and the intention classification of the aforementioned player.

[Claim 24] Computer-game equipment given in any 1 term of the claim 20 characterized by having a photography means by which a player photos the declaration-of-intention form which expressed various kinds of intentions by the body portion of a player according to predetermined timing in predetermined play space, or a claim 23.

[Claim 25] Computer-game equipment given in any 1 term of the claim 20 characterized by having a timing setting means by which a player sets up the predetermined timing which forms the declaration-of-intention form of a player, or a claim 24.

[Claim 26] Computer-game equipment given in any 1 term of the claim 20 characterized by having an evaluation means by which the formation timing of the declaration-of-intention form of a player detects having separated from predetermined timing, and reports disadvantageous evaluation about advance of a game to the aforementioned player, or a claim 25.

[Claim 27] Computer-game equipment given in any 1 term of the claim 20 characterized by having an evaluation means to detect that formation of the declaration-of-intention form of a player is abnormal, and to report disadvantageous evaluation about advance of a game to the aforementioned player, or a claim 25.

[Claim 28] Computer-game equipment given in any 1 term of the claim 20 characterized by arranging two or more lighting systems for negating shading which is equipped with two or more camera equipments which photo the declaration-of-intention form which expressed various kinds of intentions from a different direction, and is produced on the aforementioned declaration-of-intention form by the body portion of a player around each camera equipment, or a claim 27.

[Claim 29] the form of a finger [in / janken and a game / in a declaration-of-intention form] — or — both — computer-game equipment given in any 1 term of the claim 20 characterized by being the arrangement form of a tip of a foot, and the classification of the intention corresponding to this being "good" and "CHOKI" which are the intention, and the "par" which win a match, respectively, or a claim 28

[Claim 30] The declaration-of-intention form expressed by the body portion of a player is a static or dynamic form of a body important section in a gesture. A virtual partner's intention classification is the declaration-of-intention form which a player tends to imitate. The classification of the intention of a player is the form of the body important section imitated in the form of a virtual partner's body important section, and evaluation of the intention classification of a player to a virtual partner's intention classification Computer-game equipment according to claim 20 or 21 characterized by being based on the degree of deviation of the classification of the intention of a player to a virtual partner's intention classification.

[Claim 31] The declaration-of-intention form expressed by the body portion of a player is a static or dynamic form of a body important section in a gesture. A virtual partner's intention classification is the directions picture or voice to the declaration-of-intention form which a player tends to follow. The classification of the intention of a player is the form of the body important section according to a virtual partner's aforementioned directions picture or voice, and evaluation of the intention classification of a player to a virtual partner's intention classification Computer-game equipment according to claim 20 or 6 characterized by being based on the degree of deviation of the classification of the intention of a player to a virtual partner's intention classification.

[Translation done.]

*** NOTICES ***

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- 2.*** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] a computer contrasts the classification of the discriminated declaration of intention with the classification of other declaration of intention further, and this invention relates to the technology of decoding the gestalt (declaration-of-intention gestalt of a body portion) of the portion of the body showing a certain intention by computer, and discriminating the classification of the declaration of intention, and the technology of evaluating and judging the superiority or inferiority during the classification of both declaration of intention — it is a thing

[0002] Namely, this invention photos the gestalt (declaration-of-intention gestalt of a body portion) of the portion of the body showing a certain intention. The discernment method of the declaration-of-intention gestalt of the body portion using the computer of specifying the classification of the declaration of intention *** (ed) by the declaration-of-intention gestalt based on the discernment picture which carried out the image processing of the image pick-up, and obtained it, The

waging-war evaluation method of the identification unit of the declaration-of-intention gestalt for enforcing the discernment method, and various kinds of computer games which took in this discernment method as the principal part in the row It is related with various kinds of computer-game equipments (for example, janken and game equipment, gesture game equipment, etc.) equipped with the identification unit of the method of a victory-or-defeat judging or mark evaluation, etc. and the above-mentioned (declaration-of-intention [for example,]) gestalten. [0003]

[Description of the Prior Art] Changing the gestalt of the portion of the body, and expressing and transmitting a desired intention is seeing well every day. Although sign language is the type, it is common knowledge to mean affirmation, if a neck is shaken perpendicularly, and to mean negative, if it shakes horizontally. moreover, "janken" — the difference in the gestalt of a finger — or — both — it is considering as the sign which the selection intention of a stone (good), scissors (CHOKI), and paper (par) is expressed, and sports, such as baseball and a ballet ball, also change the gestalt of the portion of the body, and conveys various kinds of intentions by the difference in arrangement of a tip of a foot Moreover, it is common knowledge to express a perfect (for it to have been able to improve) intention according to the gestalt which considers as declaration of intention of selection their object with the direction gestalt (direction which a finger puts) of a fingertip, or upraises the thumb of a fist etc. Furthermore, the gesture of sign language, and the arrangement of a dance or the step of a dance is also expression of the intention by the declaration-of-intention gestalt of a body portion.

[0004] The game (computer waging-war game) which plays a match against the virtual partner whom a computer forms on the other hand various ****

Conventionally the technique (the technique of inputting various kinds of declaration of intention of a player into a computer) of conveying the intention of a player to the virtual partner formed by computer Even if it is the technique of inputting declaration of intention of a player through a mechanical input unit and is the declaration of intention simply told according to the declaration-of-intention gestalt of a body portion It had to be made to have had to correspond to various kinds of declaration of intention, and mechanical input unit players, such as a push button of a large number prepared in computer-game equipment, and a foot switch or a joy stick, had to operate it. For this reason, the game itself is very difficult for performing exactly quickly very easy selection alter operation corresponding to [for an infantile player] "good", "CHOKI", and a "par" even if it is "janken and a game", for example. Moreover, since the alter operation of declaration of intention is troublesome even if it is the older player, the flow of a game will be checked, and the speediness of a game, force, and presence will be spoiled remarkably.

[0005]

[Problem(s) to be Solved by the Invention] The complicatedness of the input technique of declaration of intention in which this invention is looked at by the

above conventional computer-game equipments, Difficulty is mitigated sharply. The speediness of a computer game, force, The mechanical input means which intervened in order to convey the intention of a player to a computer for the purpose of raising presence sharply tends to be eliminated, and the declaration-of-intention gestalt of the body portion by which the intention of a player was ****(ed) tends to advance a game as a source of input to a computer as it is. For that purpose, it becomes a technical problem to decode correctly the declaration-of-intention gestalt of the body portion used as the source of input of a computer, to discriminate the feature of a declaration-of-intention gestalt, and to specify the classification of the intention ****(ed) by the declaration-of-intention gestalt. moreover, this invention — computer-game **** — when the declaration-of-intention gestalt of a player is not normally expressed along with a predetermined rule, it aims also at maintaining advance of a fair and attractive game by giving a burden to a player

[0006] Moreover, the technology of recognizing the declaration-of-intention gestalt correctly as the direct-input information source for this invention conveying an intention for the declaration-of-intention gestalt of a body portion to a computer, two declaration-of-intention gestalten are applied to the field of gesture expression of the comparative evaluation technology based on the technology, such as the arrangement of a dance of a dance, and an exercise of a rhythm or an exercise of sign language technology, — by things ** of those gestures and movement tends to be enjoyed with the feeling of a computer game, or it is going to tie also to improvement in gesture expression technology.

[0007]

[Means for Solving the Problem] As a means for attaining the above-mentioned technical problem and purpose, this invention The declaration-of-intention gestalt as which the player expressed various kinds of intentions by the body portion in predetermined play space is photoed. The discernment picture which carried out the image processing of the image pck-up of this declaration-of-intention gestalt, and caught the feature of a declaration-of-intention gestalt is formed. By computing characteristic quantity by calculating the image data showing the feature of this discernment picture with the operation means of a computer, and specifying the classification of the intention ****(ed) by the declaration-of-intention gestalt of a player based on this characteristic quantity The declaration-of-intention gestalt of a body portion is used as an input source of a computer-game machine. The declaration-of-intention gestalt and classification reference file which furthermore connected and set up the classification of the intention ****(ed) by the declaration-of-intention gestalt of the various kinds expressed by the body portion, and this by this invention, The intention classification evaluation file which defined the of-dominance relation during each of that intention classification is beforehand stored in storage equipment. According to the timing of predetermined in predetermined play space, a player photos the declaration-of-intention gestalt expressed by the

body portion. The discernment picture which carried out the image processing of the image pick-up of this declaration-of-intention gestalt, and caught the feature of the declaration-of-intention gestalt is formed. The classification of the intention of a player is specified by collating this discernment picture with a declaration-of-intention gestalt and a classification reference file by the operation means of a computer. Moreover, the superiority or inferiority of the classification of the intention of a player in which a virtual partner's intention carries out a classification pair are evaluated and judged by collating with an intention classification evaluation file the classification of a virtual partner's intention and the classification of the intention of a player which it lets out by computer according to the above-mentioned timing by the operation means.

[0008] Moreover, it also enables it to perform disadvantageous evaluation to declaration of intention of a player in this invention, without the declaration-of-intention form of a player separating and being formed from predetermined play space, when the timing showing the declaration-of-intention form of a player separates from predetermined timing, or completing the image processing of an image pick-up of the declaration-of-intention form, when the declaration-of-intention form is an indefinite form about what is meant.

[0009] Moreover, it prevents installing at least two camera equipments photoed from an angle which is different in the declaration-of-intention form of a player in order to make a computer decode the declaration-of-intention form of a player correctly in this invention, arranging at least two sets of lighting systems around each camera equipment, and shading appearing in the declaration-of-intention form of a player, and can be made to carry out by shading on a declaration-of-intention form the image processing of the image pick-up of a declaration-of-intention form correctly and quickly.

[0010]

[Embodiments of the Invention] The declaration-of-intention form as which the player expressed various kinds of intentions by the body portion in play space predetermined in the form of one operation with this fundamental invention is photoed. The discernment picture which carried out the image processing of the image pick-up of this declaration-of-intention form, and caught the feature of the aforementioned declaration-of-intention form is formed. [0011] which is the discernment method of the declaration-of-intention form of a body portion of specifying the classification of the intention which computed characteristic quantity by having calculated the image data showing the feature of this discernment picture with the operation means of a computer, and was ****(ed) by the declaration-of-intention form of the aforementioned player based on this characteristic quantity. The form of other fundamental operations of this invention photos the declaration-of-intention form as which the player expressed various kinds of intentions by the body portion in predetermined play space. The discernment picture which carried out the image processing of the image pick-up of this declaration-of-intention form,

and caught the feature of the aforementioned declaration-of-intention form is formed. Characteristic quantity is computed by calculating the image data showing the feature of this discernment picture with the operation means of a computer. It is the discernment method of the declaration-of-intention form of a body portion of selecting the classification of the intention ****(ed) by the declaration-of-intention form of the aforementioned player from two or more predetermined intention classification, and specifying it based on this characteristic quantity.

[0012] The form of other fundamental operations of this invention photos the declaration-of-intention form as which the player expressed various kinds of intentions by the body portion in predetermined play space. The discernment picture which carried out the image processing of the image pck-up of this declaration-of-intention form, and caught the feature of the aforementioned declaration-of-intention form is formed. Characteristic quantity is computed by calculating the image data showing the feature of this discernment picture with the operation means of a computer. this characteristic quantity with the operation means of a computer It is the discernment method of the declaration-of-intention form of a body portion of specifying the classification of the intention which collated with the intention classification data which express two or more intention classification, respectively, and was ****(ed) by the declaration-of-intention form of the aforementioned player.

[0013] The form of other fundamental operations of this invention stores in storage equipment the declaration-of-intention form and classification reference file which connected and data-ized intention classification corresponding to various kinds of declaration-of-intention forms expressed by the body portion, and each declaration-of-intention form of those. The declaration-of-intention form which the player expressed by the body portion is photoed in predetermined play space, and the discernment picture which carried out the image processing of the image pck-up of this declaration-of-intention form, and caught the feature of the aforementioned declaration-of-intention form is formed. with the operation means of a computer It is the discernment method of the declaration-of-intention form of a body portion of specifying the classification of the intention which collated the image data showing the feature of the aforementioned discernment picture with the data of aforementioned declaration-of-intention form and classification reference file, and was ****(ed) by the declaration-of-intention form of the aforementioned player.

[0014] The form of other fundamental operations of this invention photos the declaration-of-intention form as which the player expressed various kinds of intentions by the body portion in predetermined play space. The discernment picture which carried out the image processing of the image pck-up of this declaration-of-intention form, and caught the feature of the aforementioned declaration-of-intention form is formed, and characteristic quantity is computed by calculating the image data showing the feature of this discernment picture with the operation means of a computer. with the operation means of a computer It is the waging-war

evaluation method of a computer game of evaluating the superiority or inferiority of the classification of an intention, and the classification the aforementioned virtual partner's intention ****(ed) by the declaration-of-intention form of the aforementioned player as compared with the data showing the classification of the intention of the virtual partner who lets out this characteristic quantity by computer.

[0015] The form of other fundamental operations of this invention photos the declaration-of-intention form as which the player expressed various kinds of intentions by the body portion in predetermined play space. The discernment picture which carried out the image processing of the image pick-up of this declaration-of-intention form, and caught the feature of the aforementioned declaration-of-intention form is formed, and characteristic quantity is computed by calculating the image data showing the feature of this discernment picture with the operation means of a computer. with the operation means of a computer It compares with the data showing the classification of the intention corresponding to the declaration-of-intention form of the virtual partner who lets out this characteristic quantity by computer. It is the waging-war evaluation method of a computer game of evaluating the superiority or inferiority of the classification of an intention, and the classification the aforementioned virtual partner's intention ****(ed) by the declaration-of-intention form of the aforementioned player.

[0016] The form of other fundamental operations of this invention stores in storage equipment the intention classification evaluation file which specified and data-ized the of-dominance relation during each intention classification by which a-izing object is each carried out to various kinds of declaration-of-intention forms expressed by the body portion. A player photos the declaration-of-intention form which expressed various kinds of intentions by the body portion in predetermined play space. The discernment picture which carried out the image processing of the image pick-up of this declaration-of-intention form, and caught the feature of the aforementioned declaration-of-intention form is formed. Characteristic quantity is computed by calculating the image data showing the feature of this discernment picture with the operation means of a computer. Based on this amount of specification, specify the classification of the intention ****(ed) by the declaration-of-intention form of the aforementioned player, and the classification of a virtual partner's intention and the classification of the intention of the aforementioned player which it lets out by computer are collated with the aforementioned intention classification evaluation file. The waging-war evaluation method of a computer game of evaluating the superiority or inferiority of the intention classification of *****, and the intention classification of the aforementioned player.

[0017] The declaration-of-intention form and classification reference file which the form of other fundamental operations of this invention connected the classification of the intention corresponding to various kinds of declaration-of-intention forms expressed by the body portion, and each declaration-of-intention form of those, and was data-ized, The intention classification evaluation file which specified and data-

ized the of-dominance relation during each aforementioned intention classification is stored in storage equipment. The declaration-of-intention form which the player expressed by the body portion is photoed in predetermined play space, and the discernment picture which carried out the image processing of the image pck-up of this declaration-of-intention form, and caught the feature of the aforementioned declaration-of-intention form is formed. with the operation means of a computer The classification of the intention which collated the image data showing the feature of the aforementioned discernment picture with the data of aforementioned declaration-of-intention form and classification reference file, and was ****(ed) by the declaration-of-intention form of the aforementioned player is specified. The classification of a virtual partner's intention and the classification of the intention of the aforementioned player which it lets out by computer are collated with the data of the aforementioned intention classification evaluation file by the operation means of a computer. The waging-war evaluation method of a computer game of evaluating the superiority or inferiority of the aforementioned virtual partner's intention classification, and the intention classification of the aforementioned player.

[0018] A player forms the declaration-of-intention form which expressed various kinds of intentions by the body portion of a player according to predetermined timing in predetermined play space, and the form of other operations of this invention photos this declaration-of-intention form, and forms the discernment picture which carried out the image processing of the image pck-up of this declaration-of-intention form, and caught the feature of the aforementioned declaration-of-intention form.

[0019] The form of other operations of this invention sets up the predetermined timing which forms the declaration-of-intention form of a player by the player side.

[0020] The form of other operations of this invention gives disadvantageous evaluation about advance of a game to the aforementioned player, when the formation timing of the declaration-of-intention form of a player separates from predetermined timing.

[0021] The form of other operations of this invention gives disadvantageous evaluation about advance of a game to the aforementioned player, when formation of the declaration-of-intention form of a player is an inaccurate usual state.

[0022] the form of a finger [in / janken and a game / the form of other operations of this invention is application to janken and a game, and] — or — both — it is the arrangement form of a tip of a foot, it is that the classification of the intention corresponding to this "is good" respectively, "CHOKI", and a "par", and an intention classification evaluation file is the agreement of the mutual strength relation between the above "good", "CHOKI", and an

[0023] The declaration-of-intention form which the form of other operations of this invention is application to a gesture game, and is expressed by the body portion of a player It is static or the declaration-of-intention form which it is the dynamic form and, as for a virtual partner's intention classification, a player tends to imitate of a

body important section in a gesture. The classification of the intention of a player is the form of the body important section imitated in the form of a virtual partner's body important section, and evaluation of the intention classification of a player to a virtual partner's intention classification is based on the degree of deviation of the classification of the intention of a player to a virtual partner's intention classification.

[0024] The form of other operations of this invention is application to a gesture game again. The declaration-of-intention form expressed by the body portion of a layer is a static or dynamic form of a body important section in a gesture. A virtual partner's intention classification is the directions picture or voice to the declaration-of-intention form which a player tends to follow. The classification of the intention of a player is the form of the body important section according to a virtual partner's aforementioned directions picture or voice, and evaluation of the intention classification of a player to a virtual partner's intention classification is based on the degree of deviation of the classification of the intention of a player to a virtual partner's intention classification.

[0025] A photography means by which a player photos the declaration-of-intention form which expressed various kinds of intentions by the body portion in play space predetermined in the form of other fundamental operations of this invention, An image-processing means to form the discernment picture which carried out the image processing of the image pick-up of the declaration-of-intention form photoed with the aforementioned photography means to the lighting system which illuminates the declaration-of-intention form, and caught the feature of the aforementioned declaration-of-intention form, It is the identification unit of the declaration-of-intention form of the body portion equipped with an operation means to compute characteristic quantity from the image data showing the feature of this discernment picture, and an intention classification specification means to specify the classification of the intention ****(ed) by the declaration-of-intention form of the aforementioned player based on this amount of specification.

[0026] A photography means by which a player photos the declaration-of-intention form which expressed various kinds of intentions by the body portion in play space predetermined in the form of other fundamental operations of this invention, An image-processing means to form the discernment picture which carried out the image processing of the image pick-up of the declaration-of-intention form photoed with the aforementioned photography means to the lighting system which illuminates the declaration-of-intention form, and caught the feature of the aforementioned declaration-of-intention form, An operation means to compute characteristic quantity from the image data showing the feature of this discernment picture, It is the identification unit of the declaration-of-intention form of the body portion equipped with an intention classification specification means to select the classification of the intention ****(ed) by the declaration-of-intention form of the aforementioned player based on this amount of specification from two or more predetermined intention classification, and to specify it.

[0027] A photography means by which a player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in play space predetermined in the gestalt of other fundamental operations of this invention, An image-processing means to form the discernment picture which carried out the image processing of the image pick-up of the declaration-of-intention gestalt photoed with the aforementioned photography means to the lighting system which illuminates the declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt, An operation means to compute characteristic quantity from the image data showing the feature of this discernment picture, It is the identification unit of the declaration-of-intention gestalt of the body portion equipped with an intention classification specification means to specify the classification of the intention which collated this characteristic quantity with the intention classification data which express two or more intention classification, respectively, and was ****(ed) by the declaration-of-intention gestalt of the aforementioned player.

[0028] The declaration-of-intention gestalt and classification reference file which the gestalt of other fundamental operations of this invention connects and data-izes intention classification corresponding to various kinds of declaration-of-intention gestalten expressed by the body portion, and each of this declaration-of-intention gestalt, and is memorized by storage equipment, A photography means to photo the declaration-of-intention gestalt expressed by the body portion of a player in predetermined play space, An image-processing means to form the discernment picture which carried out the image processing of the image pick-up of the aforementioned declaration-of-intention gestalt photoed with the aforementioned photography means to the lighting system which illuminates the declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt, It is the identification unit of the declaration-of-intention gestalt of the body portion equipped with an intention classification specification means to specify the classification of the intention which collated the image data showing the feature of the aforementioned discernment picture with the data of aforementioned declaration-of-intention gestalt and classification reference file, and was ****(ed) by the declaration-of-intention gestalt of the aforementioned player.

[0029] Gestalt of other fundamental operations of this invention A photography means by which a player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space, An image-processing means to form the discernment picture which caught the feature of the account declaration-of-intention gestalt of the lighting system which illuminates this declaration-of-intention gestalt, and the declaration-of-intention gestalt photoed with the aforementioned photography means, An operation means to compute characteristic quantity from the image data showing the feature of this discernment picture, It is computer-game equipment equipped with an evaluation means to evaluate the superiority or inferiority of the classification of an

intention, and the classification the aforementioned virtual partner's intention ****(ed) by the declaration-of-intention gestalt of the aforementioned player as compared with the data showing the classification of the intention of the virtual partner who lets out this characteristic quantity by computer.

[0030] A photography means by which a player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in play space predetermined in the gestalt of other fundamental operations of this invention, An image-processing means to form the discernment picture which carried out the image processing of the image pick-up of the declaration-of-intention gestalt photoed with the aforementioned photography means to the lighting system which illuminates this declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt, An operation means to compute characteristic quantity from the image data showing the feature of this discernment picture, It compares with the data showing the classification of the intention corresponding to the declaration-of-intention gestalt of the virtual partner who lets out this characteristic quantity by the KOYUN pewter. It is computer-game equipment equipped with an evaluation means to evaluate the superiority or inferiority of the classification of an intention, and the classification the aforementioned virtual partner's intention ****(ed) by the declaration-of-intention gestalt of the aforementioned player.

[0031] The storage equipment which the gestalt of other fundamental operations of this invention specifies the of-dominance relation during each intention classification by which a-izing object is each carried out to various kinds of declaration-of-intention gestalten expressed by the body portion, and memorizes the data-ized intention classification evaluation file, A photography means by which a player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion in predetermined play space, An image-processing means to form the discernment picture which carried out the image processing of the image pick-up of the declaration-of-intention gestalt photoed with the aforementioned photography means to the lighting system which illuminates this declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt, An operation means to compute characteristic quantity by calculating the image data showing the feature of this discernment picture, The classification of the intention ****(ed) by the declaration-of-intention gestalt of the aforementioned player based on this amount of specification is specified. by computer It is computer-game equipment equipped with an evaluation means to collate with the aforementioned intention classification evaluation file the classification of a virtual partner's intention and the classification of the intention of the aforementioned player which it lets out, and to evaluate the superiority or inferiority of a virtual partner's intention classification, and the intention classification of the aforementioned player.

[0032] The gestalt of other fundamental operations of this invention By the body

portion The storage equipment which memorizes the intention classification evaluation file which specified and data-ized the of-dominance relation during each aforementioned intention classification in the declaration-of-intention gestalt and the classification reference file row which connected and data-ized classification of the intention corresponding to various kinds of declaration-of-intention gestalten to express and each declaration-of-intention gestalt of those, A photography means by which a player photos the declaration-of-intention gestalt expressed by the body portion in predetermined play space, An image-processing means to form the discernment picture which carried out the image processing of the image pck-up of the declaration-of-intention gestalt photoed with the aforementioned photography means to the lighting system which illuminates this declaration-of-intention gestalt, and caught the feature of the aforementioned declaration-of-intention gestalt, The classification of the intention which collated the image data showing the feature of this discernment picture with the data of aforementioned declaration-of-intention gestalt and classification reference file, and was ****(ed) by the declaration-of-intention gestalt of the aforementioned player is specified. by computer It is computer-game equipment equipped with an evaluation means to collate with the data of the aforementioned intention classification evaluation file the classification of a virtual partner's intention and the classification of the intention of the aforementioned player which it lets out, and to evaluate the superiority or inferiority of the aforementioned virtual partner's intention classification, and the intention classification of the aforementioned player.

[0033] The gestalt of other operations of this invention is computer-game equipment equipped with a photography means by which a player photos the declaration-of-intention gestalt which expressed various kinds of intentions by the body portion of a player according to predetermined timing in predetermined play space.

[0034] The gestalt of other operations of this invention is computer-game equipment equipped with a timing setting means by which a player sets up the predetermined timing which forms the declaration-of-intention gestalt of a player.

[0035] The gestalt of other operations of this invention is computer-game equipment equipped with an evaluation means by which the formation timing of the declaration-of-intention gestalt of a player detects having separated from predetermined timing, and reports disadvantageous evaluation about advance of a game to the aforementioned player.

[0036] The gestalt of other operations of this invention is computer-game equipment equipped with an evaluation means to detect that formation of the declaration-of-intention gestalt of a player is abnormal, and to report disadvantageous evaluation about advance of a game to the aforementioned player.

[0037] The gestalt of other operations of this invention is computer-game equipment which arranged two or more lighting systems for negating shading which is equipped with two or more camera equipments which photo the declaration-of-

intention gestalt which expressed various kinds of intentions from a different direction, and is produced on the aforementioned declaration-of-intention gestalt by the body portion of a player around each camera equipment.

[0038] the gestalt of a finger [in / janken and a game / the gestalt of other operations of this invention is application to janken and a game machine, and / in a declaration-of-intention gestalt] — or — both — it is the arrangement gestalt of a tip of a foot, and the classification of the intention corresponding to this is "good", "CHOKI", and the "par" which win a match and which are an intention, respectively.

[0039] The declaration-of-intention gestalt which the gestalt of other operations of this invention is application to a gesture and a game machine, and is expressed by the body portion of a player It is static or the declaration-of-intention gestalt which it is the dynamic gestalt and, as for a virtual partner's intention classification, a player tends to imitate of a body important section in a gesture. The classification of the intention of a player is the gestalt of the body important section imitated in the gestalt of a virtual partner's body important section, and evaluation of the intention classification of a player to a virtual partner's intention classification is based on the degree of deviation of the classification of the intention of a player to a virtual partner's intention classification.

[0040] The declaration-of-intention gestalt as which the gestalt of other operations of this invention is application to a gesture and a game machine, and this is also expressed by the body portion of a player It is the directions picture or voice to the static or declaration-of-intention gestalt which it is a dynamic gestalt and, as for a virtual partner's intention classification, a player tends to follow of the body important section in a gesture. The classification of the intention of a player is the gestalt of the body important section according to a virtual partner's aforementioned directions picture or voice, and evaluation of the intention classification of a player to a virtual partner's intention classification is based on the distance degree of the classification of the intention of a player to a virtual partner's intention classification.

[0041]

[Example] A drawing is made reference for the following and the example of this invention is explained. The process of a computer game in which drawing 1 or drawing 5 competes for a computer and "janken", The example which applied this invention to janken and the computer-game equipment for games (game machine which considers a janken game as the virtual partner whom a computer makes) at the row is shown. drawing 1 The flow chart which shows an example of the waging-war evaluation method in the computer game which competes for janken in the discernment / specification method row of the classification (intention classification) of the intention ****(ed) by the gestalt (declaration-of-intention gestalt) of the body portion (finger) expressed by janken, The appearance perspective diagram of an example of the janken and the computer-game equipment for games which drawing 5 requires for this invention, and drawing 4 the block block diagram of this computer-game equipment and drawing 2 The declaration-of-intention gestalt and

classification contrast view for explaining one technique of discriminating and specifying classification of the above-mentioned intention, and drawing 3 are the intention classification evaluation contrast views for explaining one technique of evaluating the superiority or inferiority on the classification game of the above-mentioned intention.

[0042] As janken and the computer-game equipment for games are shown in drawing 5, a display 52 is formed in the front face of a case 51, two or more sets (photography means) of the camera equipments 53a and 53b are attached in the front upper part of a case 51, and lighting-system 54bp and 54bq are arranged with two sets of lighting-system 54ap(s), and 54aq to each camera equipments 53a and 53b, respectively. A computer is stored in the interior of a case 51, and a timing setting means 59 to select the detection timing of the gestalt (declaration-of-intention gestalt) of a loudspeaker 58 and the finger in janken is peeping into in the front face of a case 51. Not only hardware but the composition of the timing setting means 59 can be constituted only from software. The limited space (space of the range where the camera equipments 53a and 53b can photo a photographic subject sufficiently exactly) in which it is located ahead of a case 51 turns into the predetermined play space 55. a player and in this predetermined play space 55 Against the background of stage 51a, which declaration-of-intention gestalt 56 of "the stone (good)" used as the declaration-of-intention gestalt of janken, "scissors (CHOKI)", and "paper (par)" is expressed using a finger according to the timing of predetermined "janken "methamphetamine".

[0043] On the other hand, the declaration-of-intention gestalt (a virtual partner's declaration-of-intention gestalt) 57 of the janken of the janken and game made by computer which carries out virtual partner (janken waging-war partner of player) expression is expressed on a display 52, and a player competes with this virtual partner for janken and a game. Needless to say, classification (intention classification is expressed with "good", "CHOKI", and a "par") of an intention which was conscious of the strength relation between each declaration-of-intention gestalt (a "stone", "scissors", "paper") which followed by the rule of janken is ****(ed) by a virtual partner's declaration-of-intention gestalten (a "stone", "scissors", "paper") 56 and 57 at the player row.

[0044] It lets out each declaration-of-intention gestalt 57 of a virtual partner at random by the computer program. Being the character which displays the classification of a virtual partner's intention, a sign, a figure, etc., and displaying only the result of a janken match of a player and a virtual partner, even if a virtual partner's declaration-of-intention gestalt 57 expressed on a display 52 is not necessarily a gestalt (a "stone", "scissors", "paper") of a finger is also considered. Furthermore on a display 52, a virtual partner's declaration-of-intention gestalt 57 is not expressed, but a loudspeaker 58 expresses with voice or expressing a virtual partner's declaration-of-intention gestalt with the doll formed independently is also considered. in addition -- although the declaration-of-intention gestalt of janken is

usually expressed by the finger — both — it corresponds to the classification of the intention of "good", "CHOKI", and a "par" on stage 51a which can also be expressed with the arrangement gestalt of a tip of a foot, and is in the predetermined play space 55 in that case — both — what is necessary is just to express the arrangement gestalt of a tip of a foot

[0045] the declaration-of-intention gestalt 56 of a player — a lighting system — 54 ap, 54 aq, it is come out and illuminated and a photograph is taken with the camera equipments 53a and 53b 54 bq 54 bp the image pck-up of the declaration-of-intention gestalt 56 photoed with the camera equipments 53a and 53b — a computer — an image processing (binary-izing of a photography picture —) The noise rejection of a picture, a clipping of a picture, etc. are made and a discernment picture is formed. The classification (classification of "good", "CHOKI" or, and a "par") of the intention of the player ****(ed) by the declaration-of-intention gestalt 56 of a player is specified from this discernment picture by computer. Furthermore, by computer, compare the classification of the intention of this player with the classification 57 of a virtual partner's intention, and the superiority or inferiority (victory and defeat of the player as a result of janken) of the classification both intention are evaluated and judged. Display 60 reports the judgment result on a display 52, and it may replace with display 60 and, simultaneously with display 60, voice may report the result of a janken match from a loudspeaker 58.

[0046] Anyway, it is that an important thing photos exactly the feature of the declaration-of-intention gestalt 56 of a player with the camera equipments 53a and 53b by this invention, and carry out the image processing of the image pck-up quickly, and clear discernment image analysis is obtained, and some meanses are taken so that it may see in the above-mentioned example for the reason. That is, a dead angle in photoing the declaration-of-intention gestalt 56 of a player only from one direction by one set of camera equipment, when photoing the feature of the declaration-of-intention gestalt 56 depending on the position of the declaration-of-intention gestalt 56 and inclination degree to camera equipment arises, and the feature of the declaration-of-intention gestalt 56 may be unable to be caught. For this reason, it is made for a dead angle not to arise as much as possible in this invention, when photoing the feature of the declaration-of-intention gestalt 56 exactly using at least two sets of the camera equipments 53a and 53b which photo the declaration-of-intention gestalt 56 from a different direction. In addition, what is necessary is to arrange three or more camera equipments and just to enable it to photo the declaration-of-intention gestalt 56 from many suitable directions further, if still more nearly required in order to remove the aforementioned dead angle. Moreover, if shading appears in the declaration-of-intention gestalt 56 with lighting, much shading and strong shading will remain in the photography picture of the declaration-of-intention gestalt 56. In case a picture is made binary and analyzed in process of an image processing, these shadings to a top with many the obstacles and bird clappers of analysis Since many amounts of operations for image analysis

will be required and a quick image processing is spoiled, in this invention Shading produced on the declaration-of-intention gestalt 56 is negated mutually, and it is made to cut down the amount of operations for image analysis sharply with the lighting from each light source by pluralizing the light source of a lighting system, and maintained and arranging balance in the side of camera equipment optically, removing the obstacle to image analysis. And in the above-mentioned example, two sets of the minimum lighting-system 54ap(s), 54aq, lighting-system 54bp, and 54bp are arranged in the side of each camera equipments 53a and 53b. Although the problem of shading will not be produced if the light source of lighting is theoretically ***** (ed) on the optical axis of each camera equipments 53a and 53b from the first, since the arrangement is physically impossible actually, as a practical means replaced with this If the light source of a lighting system is made annular (the shape of a doughnut) and this annular light source is arranged in the said heart with the optical axis of camera equipment, the lighting system arranged in each camera equipment can stop at least one shading produced on the declaration-of-intention gestalt 56. He is examining the quality of the material, and the color and the color tone of stage 51a which serve as a background of the declaration-of-intention gestalt 56 so that it can furthermore begin to copy the profile of the declaration-of-intention gestalt 56 vividly.

[0047] Moreover, with conventional janken and computer-game equipment for games, the timing of "janken "methamphetamine"" , i.e., the timing which detects the photography picture of the declaration-of-intention form 56 (image recognition), is set up fixed by the computer side. For this reason, difficulty is followed on skillful ***** trap ***** having the timing of janken of a player by the right and wrong of the rhythmic sense of a player in C, especially doubling timing for a small child. On the other hand, in the above-mentioned example of this invention, a timing setting means 59 by which the timing of "janken "methamphetamine"" can be set up from a player side is established. That is, the timing of picture discernment is determined by making into a trigger the moment of fulfilling the conditions which have a condition check means to confirm whether the timing setting means 59 analyzes the image pck-up result of the camera equipments 53a and 53b, and fulfills certain conditions, and have the image pck-up result of the declaration-of-intention form 56. Consequently, it will opt for a setup of timing by the player side, a player doubles timing, and the difficulty of things is canceled. In addition, even if the timing setting means 59 is not hardware, it can constitute only software.

[0048] Next, the process of the discernment method of the declaration-of-intention form of the body portion used for above janken and computer-game equipment for games and the waging-war evaluation method of a computer game is as being shown in drawing 1 . Drawing 2 , drawing 3 , and drawing 4 are explained to reference for the process of these discernment method and the waging-war evaluation method. The recording device 42 of a computer 40 is made to first set up and memorize the delivery program F3 of the classification of the intention of a declaration-of-

intention form and the classification reference file F1, the intention classification evaluation file F2, and a virtual partner in Step S1. In a declaration-of-intention form and the classification reference file F1, it is the data constellation which indicated the correspondence relations of the classification of the intention ****(ed) by this to be various kinds of declaration-of-intention forms (each discernment picture), and it is the declaration-of-intention form and classification contrast view of drawing 2 which were diagrammatized for explanation in the main point of this declaration-of-intention form and classification reference file F1.

[0049] The intention classification evaluation file F2 is a data constellation which defines the relation (namely, of-dominance relation between the classification of various kinds of intentions) of the victory or defeat of the player in various kinds of combination of the kind (intention classification sign) of intention of a player, and the kind (intention classification sign) a virtual partner's intention, and each [these] combination according to the well-known janken rule. It is the intention classification evaluation contrast view of drawing 3 which diagrammatized the main point of this intention classification evaluation file F2 to explanation.

[0050] And as shown in the intention classification evaluation contrast view of ZU 3, when [both] the timing of the declaration-of-intention form (a "stone", "scissors", "paper") which a player expresses by janken is late or early (attending late), it is promised that the player is made into defeat. Moreover, when a player does not express a declaration-of-intention form outside the predetermined play space 55, or expression of the declaration-of-intention form 56 is imperfect and a clear discernment picture is not acquired from the declaration-of-intention form 56, it is promised that the player is made into defeat. Although such an agreement tends to carry out evaluation to which a player becomes disadvantageous in respect of advance of a game, tends to heighten the feeling of tension of a game and tends to aim at maintenance of a fair attractive game when the declaration-of-intention form which a player expresses is imperfect or infringes the rule of janken. It is considered variously that it will confiscate others, for example, the game, although a means of evaluation by which a player becomes disadvantageous in respect of advance of a game evaluates the classification of a player intention disadvantageously and judges the victory or defeat of janken like the above-mentioned example to be player defeat. Moreover, it is KOMPYU [0051] to which it also lets out the classification of a virtual partner's intention, and a program F3 lets out the classification of a virtual partner's intention at random by computer. Next, in Step S2, a player chooses whether it is made to decide whether to leave a setup and directions of the timing of "janken "methamphetamine"" to a computer side like before by the timing setting means 59 on condition that a player. Since preparation of janken and a game was completed now, in Step S3, a player and a virtual partner double timing and express which intention of "good", "CHOKI", and a "par." And in Step S4, by camera equipment 53 (53a, 53b), the declaration-of-intention form 56 of a player is photoed, and the photography picture (image pick-up) P1 is acquired. Subsequently, in Step

S5, when it is confirmed whether the timing of declaration of intention of a previous player was correct and the timing is correct, the quality is checked [whether expression of the declaration-of-intention form (a "stone", "scissors", "paper") of a player was normally expressed among the play space 55, and] in Step S6. When the result is good, in Step S7, the image processing of the image pick-up P1 of the declaration-of-intention form of the point of a player is carried out with the central processing unit (operation means) 41 of a computer 40. An image processing is changed into the binary-ized picture P2 which binary-ization-processed the image pick-up P1, and contained the noise, carries out noise rejection processing of the binary-ized picture P2, and makes it a picture P3, a picture P3 is clipped and processed further, and the discernment picture P4 is acquired in Step S8. And in Step S9, it compares whether it collates with the image data and the data of a declaration-of-intention form and the classification reference file F1 which express discernment picture P4 feature with a central processing unit (operation means) 41, and the classification of the intention of a player is specified, and in Step 10, the classification of the intention of a player differs from the classification of a virtual partner's intention continuously. Consequently, if the classification of both intention differs, in Step S11, with a central processing unit 41, the combination of the classification both intention is collated with the data of the intention classification evaluation file F2, of-dominance evaluation (victory-and-defeat judging) of the classification of the intention of a player is performed, in Step S12, image output unit 44 and a display 52, or audio output device 45 and a loudspeaker 58 will report the evaluation result, and one janken match will finish.

[0052] Moreover, in Step S10, when the classification of a virtual partner's intention is the same as the classification of the intention of a player, janken is performed to Step 2 on the contrary again, and the above-mentioned process is repeated. On the other hand, when the timing of declaration of intention of a player does not suit in Step S5, or when the declaration-of-intention gestalt of a player does not appear normally in Step S6, without completing an image pick-up P1 no image processing, it moves to Step S11, and in the light of the data of the intention classification evaluation file F2, it becomes evaluation of player defeat and is reported.

[0053] Drawing 4 is what shows the block composition of the janken and the computer-game equipment for games shown in drawing 5. This equipment consists of computer 40 and camera equipment 53 (53a, 53b) lighting system 54 (54ap, 54aq, 54bp, 54bq) and a timing setting means 59. A computer 40 consists of the central processing unit 41 containing an arithmetic unit, storage 42, I/O control unit 43, an output unit (image output unit) 44, an output unit (audio output device) 45, an input unit 46, etc. The delivery program F3 of the intention classification of the intention classification evaluation file F2 and a virtual partner is memorized by storage 42 at the above-mentioned declaration-of-intention gestalt and classification reference file F1 row. Although it is clear also from the above-mentioned explanation about the function of this equipment, or work of each part, the declaration-of-intention gestalt

56 expressed in the body portion of a player is illuminated by the lighting system 54 (54ap, 54aq, 54bp, 54bq), and a photograph is taken with camera equipment 53 (53a, 53b). And based on the timing signal from the timing setting means 59, the image pick-up data of the declaration-of-intention gestalt 56 of a player are inputted from the input unit of the direct computer 40, an image processing is carried out by the central processing unit (operation means) 41, and the discernment picture P4 is formed. And the image data which expresses the feature of the ***** picture P4 with a central processing unit 41 is collated with the data of a declaration-of-intention gestalt and the classification reference file F1, and the classification of the intention of a player is recognized and specified. Next, the classification of declaration of intention of this specified player and the classification (classification of a virtual partner's intention which it lets out by computer 40 based on the delivery program F3 of a virtual partner's intention classification) of a virtual partner's intention It collates with the data of the intention classification evaluation file F2 with a central processing unit (operation means) 41. The of-dominance relation between the classification of both declaration of intention (victory and defeat of janken of both) is judged, the image output unit 44 or an audio output device 45 reports the result to a player, and a game is entertained.

[0054] Drawing 6 shows the computer-game equipment for a gesture exercise as other examples of this invention. In 61, a case and 61a a display, and 63a and 63b for the stage and 62 Camera equipment, As for the declaration-of-intention gestalt of the virtual partner from whom as for 64ap(s), 64aq, 64bp, and 64bq play space and 66 serve as the declaration-of-intention gestalten (a gesture, dance, etc.) of a player, and 67 serves as [a lighting system and 65] setmaster, and 68, a loudspeaker and 70 are score displays. The discernment method of the declaration-of-intention gestalt taken in by the composition of this computer-game equipment and this computer-game equipment is the same as the thing in the janken and the computer-game equipment for games fundamentally shown in drawing 5 . However, this computer-game equipment for a gesture exercise It is that in which the declaration-of-intention gestalt expressed in a body portion includes a dynamic gesture gestalt. The classification of declaration of intention of a virtual partner is what includes a dynamic gesture gestalt with the declaration-of-intention gestalt of the body important section used as the setmaster. The intention classification evaluation file which the classification of declaration of intention of a player is a gesture gestalt which imitates the gesture gestalt of the virtual partner who becomes the setmaster, and is used here should express the degree of deviation of the gesture gestalt of the player to for example, a virtual partner's gesture gestalt, and the degree of demerit mark to it. Then, the gesture gestalt 67 of a virtual partner's setmaster which a computer lets out is projected on a display 62, and while the player which it is going to imitate in the gesture gestalt 67 of a virtual partner's setmaster looks at a display 62, according to a virtual partner's gesture gestalt 67, the body is moved on stage 61a. And the gesture gestalt 66 of a player is

photoed with camera equipment 63 at the time of some main gesture gestalten, the image processing of the image pick-up is carried out, both degree of deviation is calculated as compared with the picture of the virtual partner of a simultaneous point, it can collate with an intention classification evaluation file, the evaluating point of a player can be determined, and the score display 70 can be expressed and reported on a display 62. Upwards, such computer-game equipment for a gesture exercise can be enjoyed in a broad layer, and can expect a practical effect also as an object for study of sign language or a dance.

[0055]

[Effect of the Invention] The discernment method of the declaration-of-intention gestalt of the body portion which starts this invention so that clearly also from the above-mentioned example, With the identification unit of the declaration-of-intention gestalt of a body portion, the waging-war evaluation method of a computer game, and computer-game equipment As a means to convey the intention of a player to a computer or computer-game equipment Without minding other input conversion meanses (mechanical selecting-switch and JOI tick etc.), or changing into other input signals The declaration-of-intention gestalt of the body portion of the player with which the various intentions of a player were put is photoed. The image data of the photography picture of this declaration-of-intention gestalt is directly inputted into a computer or computer-game equipment. It is that by which processing of a game and others in which carried out the image processing of the image pick-up, it carried out image analysis, decoded declaration of intention of a player, and this declaration of intention was involved after that is performed through a computer. a player and what is [that the interface between computers is very direct, and] natural --- becoming --- the input of declaration of intention --- very --- simplicity --- it can carry out now quickly and automatically Consequently, in the field of a computer game, the small child and elderly people who the flow of a game became smooth, and can raise speediness, force, and presence now remarkably, and had followed difficulty on alter operation also become easy to participate in this kind of game. Moreover, since the declaration-of-intention gestalt of a body portion can be inputted smoothly continuously, it is utility at use development of the computer-game equipments (for example, gesture exercise equipment etc.) also for the continuous movement of the body.

[0056] Since an angle is changed and a declaration-of-intention gestalt is photoed with two or more photography meanses in photography of a declaration-of-intention gestalt So that the feature of a declaration-of-intention gestalt can be caught upwards exactly and shading may not be made to a declaration-of-intention gestalt, without lapsing into a dead angle Since a lighting system is arranged in the side of each photography means at at least two sets or the annular light source is arranged in the said heart with the optical axis of each photography means, the amount of operations which image analysis takes in the image processing of an image pick-up of a declaration-of-intention gestalt can be cut down upwards sharply, and an exact

image processing and exact analysis can be performed.

[0057] Moreover, in computer-game equipment with required like janken and the computer-game equipment for games doubling and playing timing, since it also enables it to set up timing on condition that a player side, the small child who has a problem in rhythmic sense can also participate in a game, without being accompanied by the feeling of tension and pressure of timing doubling. Moreover, since the timing which shows the declaration-of-intention gestalt (a "stone", "scissors", "paper") of a player shifts, or these are detected and it is made to take out disadvantageous evaluation and judgment with janken and the computer-game equipment for games with indispensable timing doubling on advance of a play to a player when expression of a declaration-of-intention gestalt is not proper, the feeling of tension of a game and fair game progress are maintainable.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The flow chart which shows the process of the discernment method of the declaration-of-intention form by this invention.

[Drawing 2] The declaration-of-intention form and classification contrast view for explaining the discernment method of this declaration-of-intention form.

[Drawing 3] The intention classification evaluation contrast view for explaining the waging-war evaluation method of the computer game by this invention.

[Drawing 4] The block block diagram of the janken and the computer-game equipment for games in which the example of this invention is shown.

[Drawing 5] The appearance perspective diagram of this computer-game equipment.

[Drawing 6] The appearance perspective diagram of the computer-game equipment for a gesture exercise in which other examples of this invention are shown.

[Description of Notations]

S1-S12 : Step

P1 : Image pick-up
P2 : Binary-ized picture
P3 : Noise rejection processing picture
P4 : Discernment picture
F1 : A declaration-of-intention gestalt and classification reference file
F2 : Intention classification evaluation file
F3 : Delivery program of a virtual partner's intention classification
40 : Computer
41 : Central Processing Unit (Intention Classification Specification Means)
(Evaluation Means) (Arithmetic Unit) (Image-Processing Means)
42 : Storage
43 : I/O Control Unit
44 : Output Unit (Image Output Unit)
45 : Output Unit (Audio Output Device)
46 : Input Unit
51 61 : Case
51a, 61a: Stage
52 62 : Display
53 : Camera Equipment (Photography Means)
53a, 53b: Camera equipment (photography means)
63a, 63b: Camera equipment (photography means)
54 : Lighting System
54ap(s), 54aq, 54bp, 54bq: Lighting system
64ap(s), 64aq, 64bp, 64bq: Lighting system
55 65 : Play space
56 66 : Declaration-of-intention form of a player
57 67 : A virtual partner's declaration-of-intention form
58 68 : Loudspeaker
59 : Timing setting means
60 70 : Display

[Translation done.]

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DRAWINGS

[Drawing 2]

[じゃんけん・ゲームにおける意思表示形態・種類対照図] F1

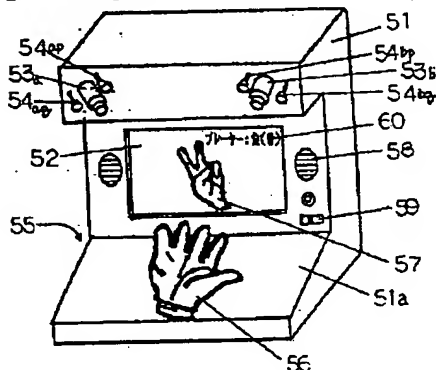
図 別 面 像	識別記号	意思表示形態	意思の種類	意思識別記号
	11	石	「グー」	Q
	12	鉄	「チョキ」	Y
	13	紙	「パー」	P

[Drawing 3]

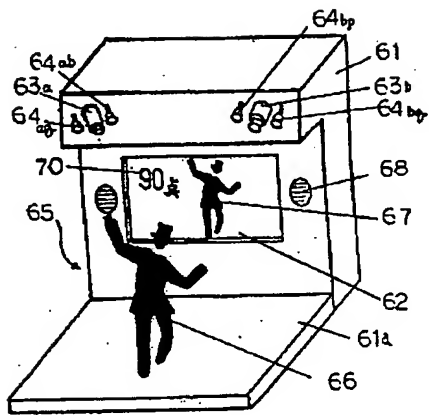
[じゃんけん・ゲームにおける意思種別評価対照図] F2

プレイヤーの意思識別記号	vs	相手の意思識別記号	プレイヤーの勝敗	勝敗記号
Q	vs	P	負け	0
Q	vs	Y	勝ち	1
Y	vs	Q	負け	0
Y	vs	P	勝ち	1
P	vs	Y	負け	0
P	vs	Q	勝ち	1
プレイヤーの意思表示遅延のタイミングずれ			負け	0
プレイヤーの意思表示遅延の頻度不良			負け	0

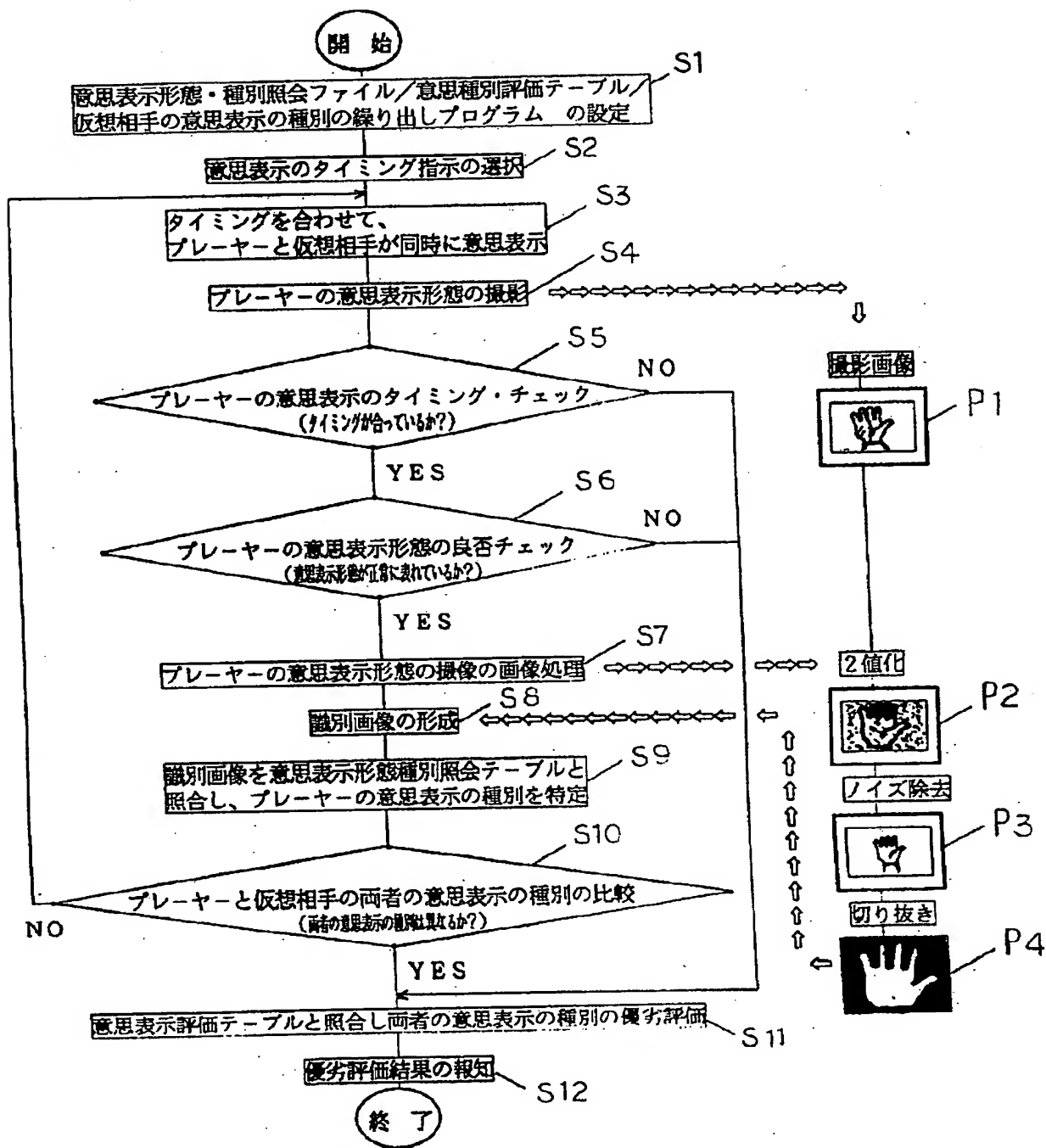
[Drawing 5]



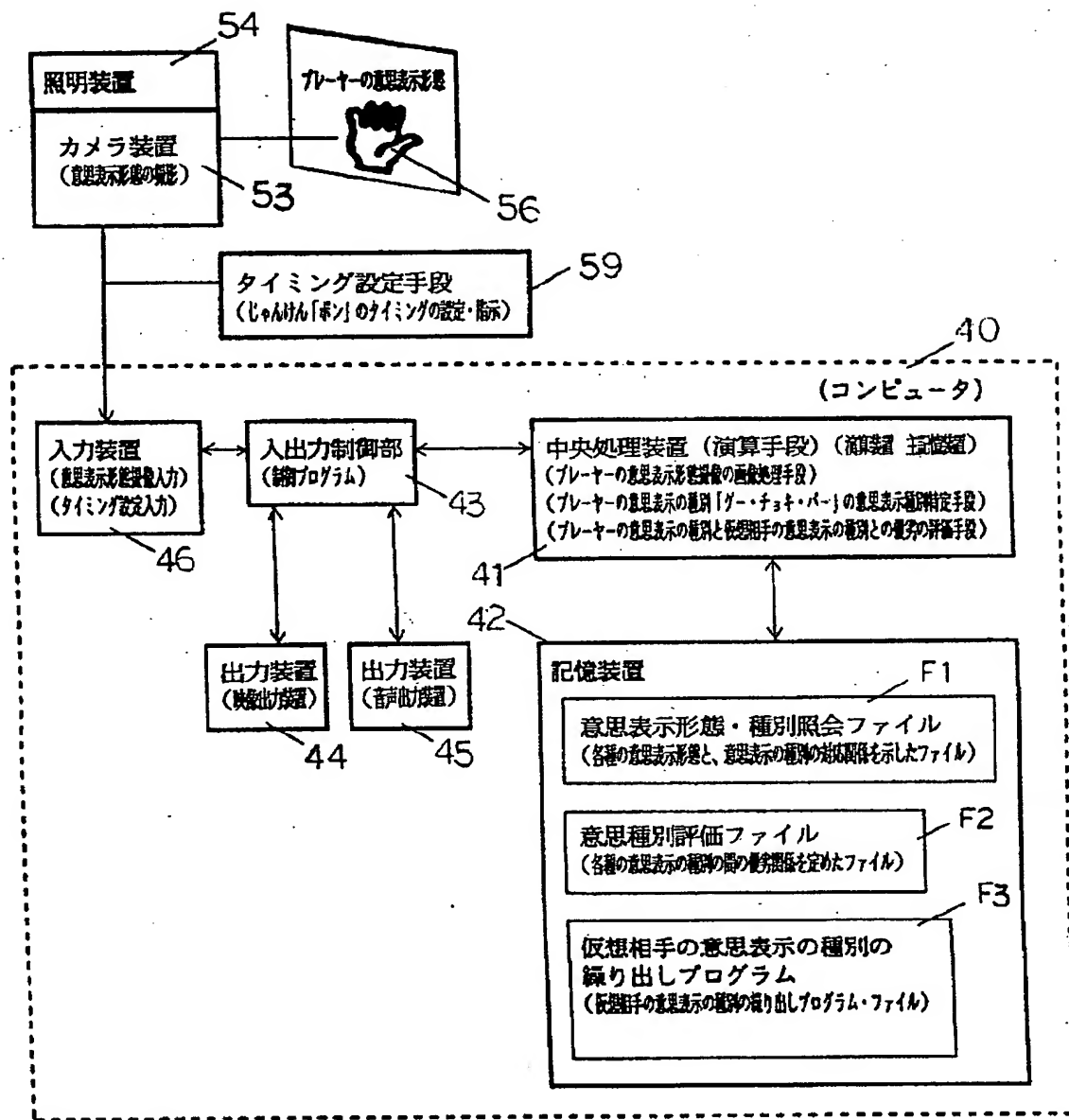
[Drawing 6]



[Drawing 1]



[Drawing 4]



[Translation done.]